PRIMARY EDUCATION

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EVA D. KELLOGG Editor

White with Bloom

"The apple tree is white with bloom;
Through spring air filters soft perfume:
And shadows lie in drifts of pink.
O thirsty soul come here to drink."

Far in the Woods in May

Far in the woods, the fresh green woods in May,
Once sang a bird; but all it found to say
Was "Keep it! Keep it!" all the merry day.

The bird? I never saw it, no, not I!
I followed, but it flitted far on high;
And "Keep it! Keep it!" — echo caught the cry.

I was so glad as through the woods I went;
And now I think that "Keep it! Keep it!" meant
"Child, keep each happy thought that Heaven has sent."

— *Edith M. Thomas*

Buds and Blossoms!

Are you ready for them? Have you kept step with the spring's advancement and have the children reached such friendly terms with the tender shoots and fresh unfoldings, that they are ready to welcome each new blossom as an expected guest?

Let the song and the story that cling about each separate beauty-blossom be waiting for it, as a part of the teacher's plan, and become closely associated in the work of the school-room. Literature and melody taught in this connection will stay in the memory forever, to return again with every spring resurrection.

But over and above all other waxy petals, all lovely tints, and beyond every other delicious fragrance, place the orchard apple blossom as the queen of all queens in Blossomland. To educate a child to see and feel the marvellous beauty, charm and graciousness of a richly-tinted apple blossom, is to lift him to an atmosphere radiant with purity, delicacy and divinity. Does every teacher know the moral power and spiritual uplift that lie deep in the heart of an apple-blossom?

The Penalty of Disuse

The penalty of disuse is atrophy. When Charles Darwin was young he was exceedingly fond of music and poetry. But years of travel and exploration created a dominating desire for natural history. For twenty years he gave his time and strength wholly to the study of fruits, flowers, birds and beasts. At fifty he awoke to the fact that his taste and imagination had died for want of food, and in their place reigned supreme the power of observation. In after years the great scientist missed the relaxation of these esthetic enjoyments, and in his days of weariness and ill-health was wont to say, "If I were to live my life over again I would make it a rule to read some poetry and listen to some music, at least, once every week."

What worker in the great, busy bee-hive of life is more in danger of losing the esthetic faculties through disuse than the busy absorbed teacher in our public schools. The work is long, the days are short and nervous energy is limited. There must be just so much of accomplishment, says the teacher, if all the music and the poetry in the world are untouched and unenjoyed. The dear, practical teacher is right and she is wrong. Accomplishment is not hindered because the esthetic faculties are fed and nourished.

The monotony of mechanical routine is the greatest danger to the teacher in her school life. It is insidiously deadening to every fine emotional element in the character. Its evils must be striven against as one fights a tendency to paralysis. How can this be done? By the cultivation of outside interests that will freshen the spirit, buoy up ambition, and feed the emotional nature. Society dissipation will never yield these results, but there *is* a social enjoyment that is not dissipation. Of this the average teacher has not half enough. The right kind of social life cultivates the taste and imagination in song, literature, and the fine arts. These are not luxuries for the teacher — something she can do without. They are vital to her own highest success and to the proper training of the children. The teacher who most reflects and radiates their influence is the teacher who touches closest the parent and child. And, again, the vexations of school glance off, when there is a fine poem, a beautiful picture, or a thrilling song in the heart. "The little petty things about my work did not worry me for three months after I first saw Niagara Falls," said a beauty-loving teacher.

With these tastes atrophied through disuse, what kind of a teacher do we have? The dead, juiceless, unattractive, machine "schoolma'am" — the greatest curse that can befall the little children in our schools. They silently plead for bread and receive — a stone.

The School-Room a Place of Joy to Childhood

M. V. O'Shea School of Pedagogy Buffalo N. Y.

NO one has ever doubted that the normal life of childhood is made up most largely of play. All the poets who have ever sung of the joys of child-life have idealized this beautiful instinct. From one point of view it seems to be a wise provision of nature to give the child a period of pure delight and happiness before he enters upon the many cares and vexations of youth and adult life. But from the standpoint of science, play in the early years of life, is an essential requisite for the proper development of body and mind. We would expect, then, that nature, cautious as she always is, would implant this desire for unceasing activity deep in the child's being, and this is precisely as we find it in every normal child. It is only in the case of the diseased or defective, when the plans of nature have been thwarted, that there is lacking a profound interest in physical and mental action.

A Few Test Questions

Doubtless every one will readily grant that an interest so vital as this should be specially recognized in all educational work; but it seems to me entirely opportune to ask here whether as a matter of fact the life of the school-room is based in any very large measure upon the play instinct, by which I meen, to repeat, the desire for free, spontaneous activity of body and mind. To bring the matter to a test, how many of my readers would say that when the child first enters school he should have nearly if not quite the same freedom of action that he has been accustomed to have at his home? How many feel, on the other hand, that the school is the place for *work*, for activity which is directed wholly by the teacher, and which may not be suggested at all by the child himself, or even liked by him perhaps? Do not most people really conceive of the school-room as a spot quite apart from the great world outside, where those who enter must leave their native interests and customary activities without and apply themselves diligently to learning? And does not the majority of mankind believe that *learning* in the old-fashioned sense is impossible, except the learner be restrained from indulging in those spontaneous and pleasant activities and occupations which have heretofore given him pleasure? Certainly one would not go far amiss in saying that school work is ordinarily thought of as allowing little opportunity for freedom of action on the part of pupils. Most of us think the school must *discipline* its scholars into quiet, controlled conduct, and we have felt that it can never accomplish this if it does not insist always upon rigid rules of quietude and restraint during the hours of the school day.

Are We All Naturally Disposed Toward Evil at First?

I have for sometime been observing the course of things in the class-room when I have had opportunity with a view to ascertaining how strongly the idea of discipline has taken hold of the average teacher's mind so that she thinks it necessary to continually restrain her pupils from ever giving expression to any tendency toward free, unfettered activity that has any likeness to play. I have frequently made notes of the commands which teachers give in the school-room to see what proportion of them aimed to prevent the children from doing anything which they naturally desired to do. It is surprising when one's attention is thus called to the matter to notice how much work of the school is concerned with forbidding. What the child chooses to do is ofttimes thought to be the very thing which he should not do. Many of us as teachers have inherited the tradition that a child's native instincts must be suppressed and others of some kind implanted in their place. One may see the effects of this belief not only in the school, but they are also very apparent in the home and in the church; in fact, they may be observed in every place where there are children. Some of us, perhaps most of us, are like the parent who sent an elder brother to search for Mary and John to find out what they were doing and tell them to stop. In many schools as well as homes the surest course for a child to take in order to be forbidden to do anything is to indicate a desire to do it; it is but just to add, however, that this barbaric condition of affairs seems to be changing; for any one who can remember his experiences in the schools of a dozen or fifteen years ago will know that much less wholesome freedom was granted pupils then than now.

Picture of a School-Room in Your City

Let me reproduce a few notes which were set down in a certain school-room one morning recently during the course of an hour. "The weather is such that the children cannot go out at recess; and a minute or two after intermission the call bell sounds vigorously. The children become instantly and perfectly quiet, and they are informed by the teacher who has assumed a military attitude of body and voice that if they talk so loud they must take their seats. They walk around for a few moments with hushed voices and muffled tread, but soon the innate desire to act in a free, unrestrained way leads them to again seem boisterous and noisy, when once more there is a clang of the bell, and they are told that this is the last warning,—if they cannot be quiet they must forfeit their freedom. Notwithstanding the great temptation to run about and talk freely with one another, the warning has the desired effect, for the children know from previous experience what will happen if they do not hold themselves under control constantly; and a little liberty is more desirable than total bondage. Now and again some of the girls venture to exercise their limbs in various simple ways, but are promptly made to feel embarrassment by the severe glance of the teacher. They easily realize that they must take their seats if they cannot conduct themselves as young ladies should. Two boys get into a little playful squabble merely because there is nothing else boyish to do, and their recess comes summarily to an end. And so the entire intermission seems an everlasting conflict between children and teacher. The children try in all sorts of ways to give expression to their pent-up energies, but the teacher seems omnipresent with the one determined purpose of nipping all such expression in the bud.

"At the end of ten minutes the regular work is taken up again. One might suppose that after the pupils had been given this period in which to walk sedately about and whisper to each other, constantly guarding themselves against any undue outbursts of feeling,—one might think after such experiences they would be greatly refreshed for their work. In this particular school the teacher always maintains that the children ought to settle down earnestly to their studies after such *restful recreation!* But one does not have to study the faces of the pupils very carefully in order to discover that they are neither rested nor refreshed. There is no evident eagerness to take up the work again; and when it does begin, the same fetish of discipline which robbed the recess of its value now makes the children more self-conscious than ever. A boy walks with some little spirit to class or shakes his body about as boys are wont to do, or does something different from what the adult might do if he were walking to the class. This boy is promptly sent back and required to perform the act over again under the critical eye of the teacher. While the class is reciting some child seems to have suddenly become possessed of a lively idea (this was not a very frequent occurrence by the way) and shows it in his whole body by various vigorous demonstrations. But one might think from the correction he received that he would never have another vigorous idea in class. Such conduct is not gentlemanly and refined or has some other serious fault. If the recitation begins to have a little interest at one point, three or four of the children venture to offer an opinion at the same time in answer to a question. This is a sufficient breach of good conduct to warrant stopping the recitation for a two-minute lecture. Judging from the faces of the children when the lecture is completed they feel that it is a terrible problem to conduct one's self properly in class.

"Meanwhile several children who have not been reciting have had to be disciplined. Some boy has dared to turn around and consult his neighbor and he must have his seat changed. Another boy has been moving restlessly around

in his seat probably from physical inability to keep quiet, and he has had to receive a couple of severe warnings. And so things go on for the whole hour. The teacher's face wears a serious aspect all the time, and it is easy to see that the discipline of her room wears heavily upon her. She is a victim of the belief that it is her duty to make each child act in all ways as if he were an adult, except indeed in the freedom to direct his own activity somewhat. This teacher is certainly conscientious in carrying out her ideal. She firmly believes her principal mission is to enforce restraint and self-control upon her children, and she is giving her life energies in carrying out her ideal to its legitimate conclusions. She is one who believes emphatically that for the most part the things children wish to do are the very things they ought not to do."

An Illustration from Medicine

It used to be thought by physicians that the instincts of a patient in regard to food and drink should never be indulged. What one who was sick wanted to eat was of all things the very one usually which should not be given him. If in a fever he desired some cooling drink it would be likely to be the death of him to quench his thirst by any such means. But as we know matters have changed utterly in this regard in the practice of medicine. Now a wise doctor endeavors to learn at the outset what his patient desires to eat or drink, and if there is anything which is agreeable to the palate he is given what he wishes of it, in most instances at any rate. For instance, fever patients are given all the cold water they wish to drink; and not only that but the sick one is often put to soak in cold water so as to reduc the great heat which consumes him. In brief, in the practice of medicine instinct is now taken as the safest guide, and it seems to me the experience of physicians ought to be suggestive to teachers.

The School-Room not a Bedlam by any Means

I realize that the school must have some rules of order or conduct which all must observe if the school is to continue to exist at all, but it by no means follows that all spontaneous action must be suppressed in the class-room. Those who believe in most stringent discipline, so-called, do not often advance the argument in support of their position that it is necessary for the welfare of the school as a whole; but they maintain rather that each child should learn at once upon crossing the threshold of the school to control himself according to the ideal of grown persons. So many teachers expect the pupils from the first to conduct themselves as if they were men and women, thinking if they do not insist upon such behavior from the outset the children will acquire bad habits.

Restraint vs. Training in Childhood

It may doubtless be amply shown that those children who have been granted the least freedom in school are the least competent to govern themselves wisely in maturity. The suppression of an instinct is not the training of it at all. The forbidding of all spontaneous activity in the school-room is not the best way to prepare for self-control in manhood or womanhood; and besides the effort to make adults of children too early and too hastily must result in a serious interference with normal development. When an instinct is active it must be indulged and trained, not totally suppressed. Is it necessary to begin at five or six years of age with severe discipline in order to make well conducted men and women? Dr. Stanley Hall tells the story of a boy who thought to develop the hind legs of a tadpole more rapidly by cutting off his tail, thinking that the energy necessary to support the tail would then go to the legs. The result was, of course, that the legs failed to appear at all, because they could only develop by absorbing the tail. So if the natural instincts of childhood are cut off inopportunely there will be little for the later virtues to absorb and thrive upon.

Interest Demands Free Activity in the Class-Room

Children must be granted a large amount of freedom of action in the class-room, both from the point of view of interest and of healthful growth of body and mind. Let me here mention a few ways in which it seems to me many of us err in not granting our pupils sufficient opportunity for self-activity or self-direction in the work of the school. In the first place, the whole subject of discipline as it has been transmitted to us from generations past needs readjustment. We must, for instance, abandon the practice of making children toe a line in reading, spelling, or in any similar exercise, and requiring them to stand there perfectly still with hands behind backs for fifteen or twenty minutes, or any other length of time. When I first began teaching there was a long white mark on the floor of my school-room which had been made by one of my predecessors, and the children had to toe up to this in all oral exercises. If they moved to the right or to the left, to the front or to the rear, it was apt to be a serious matter with them. I might continue to build up this picture indefinitely, but most of my readers will doubtless be able to fill it out for themselves. I hope the day of such things is forever past, and I am sure it is rapidly passing over the western hills at any rate.

A far better way from every point of view, I am convinced, is to have the children grouped about the instructor in recitation, taking such positions as they may choose ordinarily and moving for the most part as much as they wish. If the lesson being given is a worthy one, and suited to the needs and capacities of the children, I would be willing to trust its power to hold them so that they will in the main conduct themselves in a manner to get the most possible from it. And if the subject becomes deeply interesting and several of them express a thought at one time I certainly would not stop the recitation for criticism, and should not nag or chide any pupil for vigorously and enthusiastically expressing his opinion, unless it clearly interfered with the work of the class or the pupil meant to be discourteous. Of course all pupils cannot talk at once as a general thing; but is it not sometimes a wholesome tonic for them to do just this?

Suppress Action in Children and You Cripple Thought

Our recent studies in psychology show us that in childhood vigorous thinking must be accompanied by vigorous bodily and vocal activities. A young child who habitually has what might be called perfect control of himself from the adult point of view is nine times out of ten one who does not know active energetic thinking and whose emotions are never bright and lively. Thought and expression must go hand in hand; and the teacher who as a practice restrains the expression may be sure that she will also suppress in a measure at least the very thoughts and emotions which she is trying to stimulate and develop.

The teacher's life would be much less of a burden if her ideal of school training was so modified as to admit of a large amount of free activity in the school-room. As I have said elsewhere, so I repeat here again that such rules must be observed as are necessary to carry forward the work of instruction, but no others ought or need to be enforced. This eternal keeping in order which consumes much of the time and energy of many teachers is due to a false notion of what teaching really is and how children ought to be led to self-control in maturity. Because a child does not walk down stairs quietly and soberly and with austere demeanor as a grown-up would is no reason why he should be sent back to do it over. In fact I should regard a child who would naturally deport himself according to the adult standard as somewhat diseased or defective. If he cannot always walk to class with his hands hanging quietly at his sides, all of the wrinkles ironed out of his face, and his body carried with military precision, why, what of it? Many of the trifling disorders of the school-room would soon die out if attention was not given to them by overzealous teachers.

Discipline Ofttimes Kills Affection

One thing is certain that a child who is continually nagged for almost every thing he does in school must suffer greatly in every way therefrom. It would be strange if he would not grow soon to dislike the school as we grown people would dislike a prison-house because it has shut off our freedom. And then to always be told not to do things, to be constantly made to feel that whatever you do will be

wrong anyway is a most unwholesome and really immoral training for any one. Of course every child when he comes to school knows that certain kinds of conduct are wrong, and the teacher may vigorously insist upon the observation and practice of the large matters of morality and propriety, but the details will take care of themselves in time if they are not made too conspicuous at the outset by constantly directing attention to them.

Shall We Begin to Read Spell and Cipher the First Day?

I have spoken only of discipline, but some of the studies which young people are required to pursue are calculated to give little opportunity for the activity which they so much crave and need. If we center most of our attention upon reading, number, and spelling, when the child first enters school he will have little chance to indulge his natural desires for physical and mental spontaneity. To master any of these subjects requires great concentration of attention; whereas a child may appreciate nature-study or literature and may express his thoughts through modeling, drawing, and painting while indulging his appetite for free spontaneous action of both body and mind. For the most part we have little to say in the making of the school curriculum, and so must teach certain subjects whether or no; but so far as lies in their power primary teachers especially should arrange work for their children which will allow some lively action in its prosecution. Reading, spelling, and number will be gained in due season if not emphasized too greatly at the beginning of the school course.

A Few Final Suggestions

Then again, in her methods of presenting the different subjects the teacher should endeavor to take advantage of this profound interest. The pictures for language lessons should express activities, and the lessons should be concerned with these activities rather than with the mere structure of things presented. For example, a lesson with the youngest children upon the horse should relate to what the horse can do and does rather than with his anatomy. So with the illustrations in reading-books life and action should be the prominent characteristics of the pictures and those which the teacher should make use of in her instruction. In literature, children should first have the narrative rather than the descriptive. In gymnastics, free games and plays are far more suitable from every point of view than formal disciplinary exercises. Many suggestions along this line will occur to the watchful teacher who will study the effect upon her class of appealing to this profoundest of all interests.

The Spirit that Quickeneth

ESTELLE M. DARRAH Stanford University Cal.

JUST as the scientist can gather typical living forms to illustrate successive steps in physical evolution, so can the student of education arrange contemporary courses of study in a series showing the evolution of pedagogical theory. In few subjects are the links more complete than in nature study. It is still most commonly found in that delightfully differentiated state in which the teacher is directed to "Encourage children to make careful observation of nature on the way to and from school." Thence it passes on to more highly specialized forms. The use is specified of "Bancroft's Charts, Nos. 6, 7, and 8, Animal Kingdom." "The study of plants, with Hooker's Child's Book of Nature, Part 1," is required. "Practical Entomology is to be taught orally from Wickson's Charts."

Toward the apex of the series we find those highly differentiated courses which compel Minnesota children to study the starfish and sea-urchin, and Arizona children to master fogs, rain, and snow. Finally, as the crowning point, the whole world of energy and matter is partitioned exactly among the several grades, with the tacit understanding that the teacher to whom the bean and squash are assigned dabbles in vertebrates at the risk of his position.

What it is possible for children *not* to do in the way of observation, in spite of a well-organized course of study, has been shown in a recent examination of papers from a city justly famous for its advanced system. Out of four hundred and fifty statements of fact concerning natural objects, two hundred and fifteen, or almost one-half, were such as could not have been gained through observation. Among these we find:

"The dipper is composed of seven stars. Their names are Jupiter, Mars, Mercury, Venus, Oranus, Neptune and Saturn."
"The north star never moves. It is called the pole star because it is the pole of the earth."
"The stars do not shine by their own light, but the sun shines on them and they shine on the earth."
"The moisture in the air comes from the lungs."
"We don't have hailstorms in summer because there are no cold currents of air."
"Oxygen will not support life because it burns steel."
"The cow can't kick and run because its legs are short."
"If a cow loses her cud she will die."
"Those who drink beer are almost always killed by it."

Now there is no lack of material for observation. Flowers and trees and birds and myriads of other beings are waiting to tell the most marvellous stories. There is no lack of interest on the part of the children. There is no lack of hard and unselfish work on the part of the teachers. The source of the whole difficulty is that teachers themselves are not investigators, and neither books nor courses of study can make them such. As well expect the Apache to teach electrical engineering, or the woodsman to teach agriculture, or the miser to teach love, as expect the teacher who is not himself a truth-seeker to teach children to seek truth. The teacher must himself propound questions to nature, he must himself be eager to find her answers, before his pupils will take that attitude.

The problem before us, then, is not what animals or plants or minerals to teach in the first grade or the eighth grade, but how to put our teachers into the attitude of truth-seekers. Herein lies the opportunity of the special teacher or the supervisor, which has been too often overlooked. He exists for the purpose of communicating to others his own zeal for truth — of making others investigators. But we have circumscribed his field of action, demanding from him first of all the strict partition among the grades of the heavens, the earth and the sea, and all that in them is. And in following courses of study, unillumined by any personal longing for truth, the teacher must necessarily do more harm than good. "For the letter killeth, but the spirit giveth life."

In one manner alone can the supervisor communicate to his teachers the true method of nature study — by associating with him in his own investigations those teachers who have the student spirit. "The art of teaching," Earl Barnes wisely says, "must be caught by contagion." Long before nature study was included in the curriculum of St. Paul schools, half the teachers were devoting their Saturdays to field excursions with their pupils, bringing home spoils which all studied together. This interest and enthusiasm came out of their voluntary study with Mr. C. B. Scott, now of the Oswego Normal School. The teachers of Oakland, California, have inaugurated a movement which cannot fail to bring forth great results. The one hundred and fifty teachers of that place have voluntarily subscribed a thousand dollars, with which they have employed one of the best biological students of Stanford University to teach them how to study nature.

We all agree theoretically that the object of nature study is not the gaining of information about nature, and that its method must be the study of realities at first hand. To judge from our courses of study, most of us appear to agree that a definite assignment of subject matter carries with it the ability to teach. But experience demonstrates that only teachers who are themselves investigators can send their pupils straight to nature. The special teacher or supervisor of elementary science must himself be a student of such enthusiasm and such teaching ability that his associates catch his own spirit and method, and draw with them in turn their own pupils to find

"Tongues in trees, books in the running brooks,
Sermons in stones, and good in everything."

History of Bird Day

Bird Day is more than a suggestion. It has been already adopted in at least two cities with marked success, but as yet is still an experiment. Apparently the idea originated with Professor C. A. Babcock, superintendent of schools in Oil City Pa., who wrote to the Department of Agriculture in 1894, urging the establishment of such a day and stating that May 4 would be observed as Bird Day in Oil City. In reply, the Secretary of Agriculture sent the following letter:

WASHINGTON, D. C., April 23, 1894.

MR. C. A. BABCOCK,

Superintendent of Schools, Oil City Pa.

DEAR SIR: Your proposition to establish a "Bird Day" on the same general plan as "Arbor Day" has my cordial approval.

Such a movement can hardly fail to promote the development of a healthy public sentiment toward our native birds, favoring their perservation and increase. If directed toward this end, and not to the encouragement of the importation of foreign species, it is sure to meet the approval of the American people.

It is a melancholy fact that among the enemies of our birds two of the most destructive and relentless are our women and our boys. The love of feather ornamentation so heartlessly persisted in by thousands of women, and the mania for collecting eggs and killing birds so deeply rooted in our boys, are legacies of barbarism inherited from our savage ancestry. The number of beautiful and useful birds annually slaughtered for bonnet trimmings runs up into the hundreds of thousands and threatens, if it has not already accomplished, the extermination of some of the rarer species. The insidious egg-hunting and pea-shooting proclivities of the small boy are hardly less widespread and destructive. It matters little which of the two agencies is the more fatal since neither is productive of any good. One looks to the gratification of a shallow vanity, the other to the gratification of a cruel instinct and an expenditure of boyish energy that might be profitably diverted into other channels. The evil is one against which legislation can be only palliative and of local efficiency. Public sentiment, on the other hand, if properly fostered in the schools, would gain force with the growth and development of our boys and girls and would become a hundredfold more potent than any law enacted by the State or Congress. I believe such a sentiment can be developed, so strong and so universal, that a respectable woman will be ashamed to be seen with the wing of a wild bird on her bonnet, and an honest boy will be ashamed to own that he ever robbed a nest or wantonly took the life of a bird.

Birds are of inestimable value to mankind. Without their unremitting services our gardens and fields would be laid waste by insect pests. But we owe them a greater debt even than this, for the study of birds tends to develop some of the best attributes and impulses of our natures. Among them we find examples of generosity, unselfish devotion, of the love of mother for offspring, and other estimable qualities. Their industry, patience, and ingenuity excite our admiration; their songs inspire us with a love of music and poetry; their beautiful plumages and graceful manners appeal to our esthetic sense; their long migrations to distant lands stimulate our imaginations and tempt us to inquire into the causes of these periodic movements, and finally, the endless modifications of forms and habits by which they are enabled to live under most diverse conditions of food and climate — on land and at sea — invite the student of nature into inexaustible fields of pleasurable research.

The cause of bird protection is one that appeals to the best side of our natures. Let us yield to the appeal. Let us have a Bird Day — a day set apart from all the other days of the year to tell the children about the birds. But we must not stop here. We should strive continually to develop and intensify the sentiment of bird protection, not alone for the sake of preserving the birds, but also for the sake of replacing, as far as possible, the barbaric impulses inherent in child nature by the nobler impulses and aspirations that should characterize advanced civilization.

J. STERLING MORTON
Secretary of Agriculture

Reverence for a Bird's Nest

Riding one day over the plains at the end of a long detachment of men, General Custer made a sudden change of direction at the head of a column. As the men reached a certain point they rode off to the right, rank after rank, as if an invisible hand had smitten them out of their course. The curiosity of those at the rear of the line was excited, and as they approached the point they looked carefully to see what had caused the change of direction, and they found in the desert a bird's nest full of tiny eggs. A long detachment of men had turned aside rather than crush that bit of life in the universal aridity. There is a parable in that incident which Americans would do well to study.

— Hamilton Mabie

Three O'clock in the Morning

What do the robins whisper about
From their homes in the elms and birches?
I've tried to study the riddle out,
But still in my mind is many a doubt,
In spite of deep researches.

While all the world is in silence deep,
In the twilight of early dawning
They begin to chirp and twitter and peep,
As if they were talking in their sleep,
At three o'clock in the morning.

What do the robins whisper about
In the twilight of early dawning?
Listen, and tell me, if you find it out,
What 'tis the robins whisper about
At three o'clock in the morning?

— Selected

Sound

ANNA M. CLYDE Landreth School Philadelphia

OBJECT. To lead children to understand first vibratory movement, and then its connection with conveyance of sound to the mind.

I. To show vibratory movement.

Fasten a steel knitting needle in a peg board. (Fig. 1) Pull the top of the needle over a little way, then let it go. It vibrates rapidly. Repeat the experiment several times. The children will say the needle is moving. Ask a boy to move from one desk to another. What is the difference between the way the needle moves and the way the boy moves? The boy changes his place, while the needle does not. Explain then, that when a body moves, without changing its place, it is said to vibrate, and that the movement made by such a body, is called a vibration. Have a child strike a fork on a glass. Holding the fork very lightly in the hand the vibrations are plainly felt. Let as many children as possible perform this experiment. All will be anxious to try.

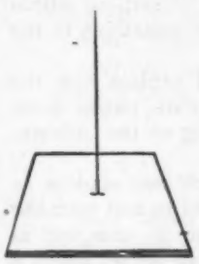


Fig. 1

Vibrate the needle again, and, while it is in motion, let a child hold his finger close to the top. Of course it hits his finger. Tell the children then, that vibrating bodies are always giving blows.

II. To show a bell vibrates when struck and that in vibrating it gives blows.

From one end of a splint suspend a small celluloid ball. (Fig. 2) A needle can be run through the celluloid, and so thread the ball, as a bead would be threaded. Place the center of the splint on the top of the knitting needle. Stand a call bell so the ball just touches its side. Strike the bell. The ball is thrown off and on returning and touching the bell is again thrown off. This is repeated until the vibrations cease. Now, then, if no ball were there to receive the blows given by the bell, what would it hit? Prepared by the lessons on air; the

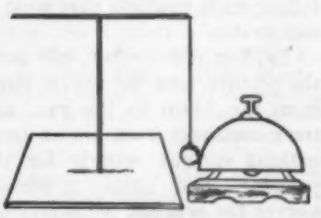


Fig. 2

children will say at once the air will be hit. Now how does the air act when hit?—not as quietly as you might suppose.

III. To show how the particles of air act when hit by a vibrating body.

Make a frame of wood, the base being broad enough for the frame to stand. From the top suspend, by wires, five wooden balls. (Fig. 3) They must hang loosely, and just touch each other. Cover a small hoop with tissue paper, and place it so it faces the last ball about two inches away from it.

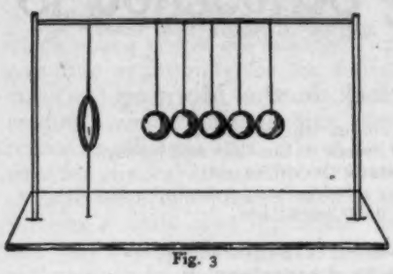


Fig. 3

Pretend the balls are the air, each being one of the little parts making it up. Pull aside endways the first ball. Let it go. What happens? It hits the second ball. The second hits the third; it hits the fourth which hith the fifth. *It* jumps out into the air and hits the paper covering the hoop. The hoop cannot move, but the paper shakes. No ball moved more than a very little. This shows how the particles of air are struck by a vibrating body each one strikes the particle next to it. Each one now struck strikes that next to it and so on, till the blow given is carried a long distance.

At last the blow given by the vibrating body reaches our ears (ring the bell). Recall to the minds of the children all that happens. The bell vibrates. The blows given the air are given to the air next, and so on, until the last blow is given to our ears, and we — hear the bell ring — or hear some sound.

How is it we hear a sound when the little particles of air strike the ear?

Something else must first be learned, before this can be understood.

In a conversational lesson about a train, lead the children to tell of the necessity of steam to make the engine carry the cars along the tracks. Then speak of something within each one of us that makes us move. This something is the *brain*.

Show pictures of the spinal column and explain how the spinal cord, issuing from the base of the brain, passes down through the little holes in the bones making up the column. If possible show some single bones.

Then use the picture of a spinal column and explain as simply as possible how messages are carried to and from the brain along the nerves. Make this lesson as concrete as possible. Let the children taste sugar or an apple, smell a flower, touch the cold, wet sponge, feel the sharp points of the pins, hear the bell, and see the bright, pretty colors.

Show how none of these things would be known if the message were not conveyed along one of the nerves *in* to the mind in the brain. Have them move hands, fingers, feet, stand, walk, etc., and explain how the message was carried *out* from the brain to the different parts of the body telling each smallest part what it was to do.

1 tube.
2 drum-head.
3 little bones
4 inner drum-head
5 winding passages

Fig. 4

Explain still further, still using the picture, how the nerves come from the brain to the ear, and trace messages from ear to brain making various sounds for this purpose, and again impress the class that without the nerves for hearing, we would hear no sound.

Show a picture of an ear showing its internal construction. (Fig. 4).

The little particles of air being set in motion the motion is carried to the air in the tube of the ear. This air vibrates, and shakes the drum-head at the inner end of the tube, just as the ball made the paper on the hoop shake. Inside of the drum is a chain of bones (four in infancy, later three). The drum-head, in vibrating, causes the first bone to shake the second. It shakes the third which is fastened to another little drum-head. It too is shaken. This little drum-head covers the opening to some winding passages in bone. In these little places is a watery fluid, and floating in this fluid, is the nerve from the brain. When the second drum-head vibrates it shakes the fluid contained in the winding passages. The nerve feels this shaking, and immediately carries the *message in* to the brain and we say we hear a sound.

Review all that takes place every time a sound is heard. Speak of the rapidity with which the vibrations enter the ear, when a succession of sounds is heard, and yet they are never jumbled together, each goes into the ear by itself, and so each sound is heard distinctly.

Having learned how air carries sounds to the ears, the children are ready to test the conductibility of other substances, or one other at least — wood.

Let them lay their heads down on their desks with one ear flat upon it, rap upon the desk with their knuckles, raise their heads and rap again. Then compare the two sounds.

Have them take their rulers and scratch up them with a pin. No sound, except a very faint one is discernible.

Have the rulers put close to the opening to the ear, and scratched again. Comparison of the sounds shows the wood superior to the air as a conductor of sound. The use to which this knowledge is put in making musical instruments, may form the subject of an interesting and profitable conversation.

If possible, have some simple instrument, like the autoharp played, to impress this lesson on the class. The playing of this leads up to another lesson—on the distinction of musical sounds from noises.

Play the instrument, and then upset a box containing several articles. Contrast of the two sounds will draw from the children that one is music and the other a noise. Now we want them to find out, that regular vibrations of air make music, while irregular ones cause the sound to be a noise.

With a small hammer rap regularly upon a table — then irregularly. Which sounds are most musical? The first of course. Get them to tell how the blows were given first — evenly or regularly, and then that the vibrations causing the first sounds were regular. Questioning as to the kind of vibrations making noises there will be found no difficulty in having them properly explain that noises are caused by irregular vibrations of air.

Apply the lesson of regular vibrations making music, by having the children march, with a steady swing to command, — then halt, and march marking no time. Lead them to desire to keep in step, in harmony, not only in their march but in their lives. Contrast the gruff voice with the soft, gentle one — the loud, rude laugh with the low, musical one.

Speak of the music of nature, the song of the babbling brook, the lullaby sung by the waters, as they break o'er the pebbles at their feet, the hum of the bees and the songs of birds. The world is full of happy creatures singing. Let the children *sing* to carry this lesson home.

Do not let the lessons taught by the subject-sound be lost. Properly conducted and applied, they can be made to have a lasting effect on the characters of our children; and sometime, in the future, perhaps, *one* may again come our way whose life, influenced by these early lessons, has become

One grand, sweet song.

Two Trusty Blades

"I'll Try," is a blade that will win its way
Through many a hard wood knot —
Will patiently seek for the surest path
To reach a coveted spot.

"I Can" is a sword both trusty and true,
Which wins when others have failed;
Its temper is perfect, its edge is keen,
Its lustre has never paled.—*Sel.*

Mistakes in Nature Study

Mistakes have been made in bringing young children into contact with life phenomena. The dissection that calls attention mainly to the parts of plants is one of these. The analytic processes is neither natural nor inspiring to young children, and creates no general interest in plant life. Attempting too much has been another error. A few simple things of natural interest will be of more value than a complete system that lacks vital relation to the child's life. The cultivation of observation merely for the sake of observation is another. Thus plants should be considered as things at work, not simply things with parts: as things moving, breathing, and pulsating with life. A number of suggestions were given as to what might be observed with profit. The position plants take with reference to the light shows that they are not dead affairs, but living forces. That color holds some relation to the light which enables the plant to perform its work better, instead of being ornamental only, can be studied by observation. The rain adaptations of plants, the relations between the root and leaf systems; the adaptation to droughts by the reduction of the exposed leaf surface, like a vessel taking in its sails,—all these are vital and important as well as interesting to young and old. The right positions of plants, their behavior towards each other, suggest other lines of observation appropriate to young pupils.

Such work requires a greater knowledge of subject-matter than the so-called higher grade botany, but the demand for work that shall lay the right foundation is constantly increasing.

— Prof. Coulter of Chicago University

Little Peach Blossom

Little peach blossom has awakened at last,
What do you think awoke her?
Not the birds, as they sang and twittered all day,
And talked of their nests and the eggs they would lay;
Not the wind, as it rocked her cradle so fast,
And told her that winter had long ago passed;
Not the sun, as he wrapped her in an embrace,
And showered sweet kisses upon her sweet face;
Nor the moon, nor the stars, though they glistened so bright,
And tried to persuade her to wake in the night,—
But a warm April shower fell on her one day,
With a quick dash of rain; and this is the way
That little peach blossom first opened her eyes,
With a faint little blush, and a look of surprise.

— Selected

A Child Study Letter

Dear Editor: — I have become interested in the articles on child study published in the PRIMARY EDUCATION. My observation has been limited, but my eyes are being opened to the many ways in which we may aid our pupils if we study them.

I have a child in my grade, who, when she copied anything from the board made the letters without any regard to the forms in the copy. At first I attributed it to carelessness. I talked with her about it, but no improvement was made. One day I asked her whether she could see the letters on the board, and she replied that everything looked blurred. Was it any wonder that she formed her letters badly? By testing a little I found at what distance she could see letters distinctly, and then gave her a seat at the front of the room. Since then her writing has improved greatly.

C.

The Bird and the Pine Tree

M. A. L. LANE

The Bird. May I make a nest in your top, good pine-tree?

The Tree. Yes, I like to swing little birds to sleep.

Bird. Thank you, pine-tree, but the wind swings them to sleep.

Tree. Yes, he sings like the sea. But it is only in the pine-trees that he sings like that.

Bird. It is in the pine-trees that I like best to make a nest. May I make it of your sticks?

Tree. If you like, but they are not very smooth. Is it to be a little nest?

Bird. Oh, no! I like a big nest. I am a big bird.

Tree. I can not see you, it is so dark.

Bird. I am very black, very big, very wise, and very old.

Tree. Are your little birds pretty?

Bird. Oh, yes! They are like me. They are very pretty, indeed.

Tree. Can they sing?

Bird. Yes, indeed. They will sing to you all day.

Tree. I like to hear little birds sing. Once I had a nest of little crows. Oh, they were so black and ugly, and they made such a noise!

Bird. Good-bye, Pine-tree. I shall not make my nest in your top, and my little birds shall not sing to you. My name is Crow.

May Flowers and Grasses

This I have found helpful and interesting to pupils of all ages: Have a certain portion of the blackboard or sheets of manilla paper reserved for a flower calendar. Write each morning the names of the flowers brought, the date, where found, and by whom. Spend a few minutes in talking about each flower. The following were brought me for May.

— Sara Lane

Dandelion — White Maple — Birch — Plum — Low Blueberry — Pear — Peach — Apple — Wild Black Cherry — Cultivated Black Cherry — Dwarf Ginseng — Jack-in-the-Pulpit — Red Berried Elder — White Birch — False Mitre Wort — Swamp Maple — Wild Hydrangea — Fly Honeysuckle — Mountain Fly Honeysuckle — Rhodora — Star-flower — Polygala — Painted Trillium — False Soloman's Seal — Sweet Fern — Butternut — Crab-apple — Iris — Red Currant — Black Currant — Gooseberry — Oak — Ground Ivy (Gill) — Wild Mustard — Lilac — Choke berry — Lousewort — Dewberry — Twisted Stalk — Red Clover — Snakeroot — Columbine — Herd's Grass — White Lilac — Bunch Berry — Thorn-bush — Blue-eyed Grass — Common Cinque-Foil — Azalia — False Spikenard — Spurge — Celandine — Shepherd's Purse — Horse Chestnut — Sarsaparilla — Bulbuous Buttercup — Quince — Lady's Slipper — Clintonia — Robin Plaintain — Mallow — White Pine — Arrow-leafed Violet — Early Buttercup — Swamp Blueberry — Caraway — Choke Cherry — Striped Maple — Golden Ragwort — Cranesbill — Poke — Meadow Rue — Horse Radish — Raspberry — Downy Yellow Violet — Great Solomon's Seal — White Baneberry — Small Honeysuckle — Perfoliate Bellwort — Sessile Bellwort — Silvery Cinque — Rye — Sorrel — American Dog Violet — High Blackberry.

He sings each song twice over
Lest you should think he never could recapture
The first, fine careless rapture.

— Browning

The Anemone.

Primary Reading

IX

Olive M. Long

Once a little anemone grew in the woods.
It grew under the dead leaves.
It grew in among the big trees.
They all took care of the tiny flower.
The big trees kept the sun from shining too brightly.
It only smiled kindly through the branches.
The gentle rain wanted to help, too,
So it fell softly, — "Patter, patter!"
The trees kept the wind from blowing too hard.
Only a little breeze got in.
It blew away the dead leaves.
It woke the little anemone.
She opened her pretty eyes.
She was glad to find so many friends.
She danced with the little breeze.
She loved to play with it.
Perhaps that is why her name means Wind Flower.

The Robin

To-day I made a visit.
I went to call on Mr. and Mrs. Robin.
They have come back from the South.
But they did not look at me.
They were too busy.
They were very happy, too.
They have gone to house-keeping.
They were not at home to callers.
But I saw their little house.
It was built of sticks.
It was up in a tree.
I did not look inside.
I did not think it would be polite.
But I know a secret about it.
I heard Mr. and Mrs. Robin singing about it.
They did not know I was listening.
And what do you think the secret is?
There are four little eggs in the nest!
They are a beautiful robin's egg blue.
And by and by something will happen.
Can you tell me about it?
Yes,— there will be four little baby robins.
Do you wonder Mrs. Robin is happy?

How to Secure Poise

The following statements are sometimes made: "Forget your shoulders, put your hips back and your head up, and instantly the spine assumes its proper curves;" in this lies "the secret of poise in standing and grace in walking." It contains a truth; at the same time it contains an error.

The direction "Forget your shoulders," if followed, will avoid much that destroys proper balance, and is in so far good. This is easily seen by noting the result of the usual direction, Put back your shoulders, given to a child in the morning before it is dressed (in the morning because the shadows are less troublesome; undressed, because your observations are more accurate). A side view will show abdomen and head protruding, shoulders stiff and constrained. This surely does not lead to proper poise. Yet this direction is often the only one given to the child for securing proper balance.

Hold the head up is also good advice if it means draw in the chin and push up with the crown of the head, as this helps to raise the chest.

Now ask the child to put back the hips. If he is at all flexible, you have produced a short, sharp curve in the lower part of the spinal column, which is an exaggeration of the normal curve, and one kind of spinal curvature. To the statement, Let your shoulders alone, it would be well then to add, Let your hips alone.

The question is one of proper poise or balance — so to balance the body that internal organs shall not be displaced or parts of the body unsymmetrical.

The first step is to teach the child to balance properly with the weight on both feet. Have him stand as before. Attention should be centered on two points — the upper part of the chest and the ankles. Tell the child to push forward and raise the upper part of the chest; next, to lean forward, keeping an unbroken line from breast-bone to ankle, until the top of the bone is as far forward as the balls of the feet. Rising on toes from this position will develop the child's sense of poise. Whenever this position is taken (and it should be often), raise the heels slightly from the floor for a moment, to be sure that the weight is well forward. If the child already has ribs that are flattened in front, and pushing out the shoulder-blades behind, it will be some time before he can assume more than an approximately correct position. Every effort, however, toward symmetry is a move in the right direction, and this new position that now has to be consciously maintained will in time become habitual.

This position, with the weight on both feet affords no opportunity for rest, and so the child must be taught to stand properly, with the weight on one foot; properly, because the child is prone to assume a position on one foot in which the same hip is habitually lowered. The lack of symmetry caused by this tilted pelvis is seen in the lateral curve of the spinal column, the lowered shoulders, the face that is flattened on one side, and other similar results. The effect on internal organs is not so evident, but is equally serious, since there must be a readjustment of them all. Again poise the child properly, with the weight on both feet; ask him to take a step forward, still keeping the unbroken line from ankle to breast-bone. Test the position by having him lift the back foot from the floor, at the same time slightly lifting the heel of the forward foot; the weight is now borne by that foot. Without changing the weight, lower the heel and replace the free foot nearer the body. . . . The child is now properly balanced on one foot. To rest, take a step forward, thus transferring the weight to the other foot. If you wish the free foot in front, take a step backward.

To secure poise, then, forget your shoulders and hips; avoid round shoulders by drawing the ribs forward and upward away from the shoulder-blades; preserve the normal curves of the spinal column by leaning forward in an unbroken line from ankles to chest; add to symmetry by keeping the pelvis level; secure rest and freedom of motion by standing with the weight properly on one foot. Poise is fundamental, and underlies health, grace and symmetry.

— Delphine Hanna in the "Outlook"

Director Woman's Gymnasium of Oberlin College

Beans and Their Development

CHARLES B. SCOTT State Normal School Oswego, N. Y.

A Study of Germination

THERE does not seem to be much connection between bean plants and school-rooms, and yet I rarely see a bean plant growing that it does not bring into my mind a picture of a school-room I visited several years ago. A most vivid part of the picture is invariably a flower-pot in a window with two bean plants growing in it, one showing a partly developed pod.

I had often heard of the disorder in that particular room. At this visit I found a new teacher and a new spirit and the principal told how the teacher and the bean plants had made the wonderful change; how the children had become interested in watching the beans push out of the ground, how the teacher had delegated to the "tough" boy the care of the plants (I remember how proudly he showed to me is charge and pointed out bud and flower and half-formed fruit) and how "our plants" had furnished the opportunity for many morning talks and suggested many thoughts and lessons.

I could not help thinking of another teacher who so often turned with his pupils the leaves of the same book of nature and made what their eyes saw, the seed scattered by the sower, the mustard seed, the grain of wheat, the means of reaching their hearts.

Then I think of frequent visits to a poor section of a large city and of the pea and bean plants seen growing in scores of windows and little front yards, often the only bright attractive spots in the neighborhood. It was not necessary to inquire as to the source of these. All come from earnest enthusiastic teachers in a school in the vicinity whose work in the three R's did not suffer because they took time to help their pupils read a little in the "manuscript of God."

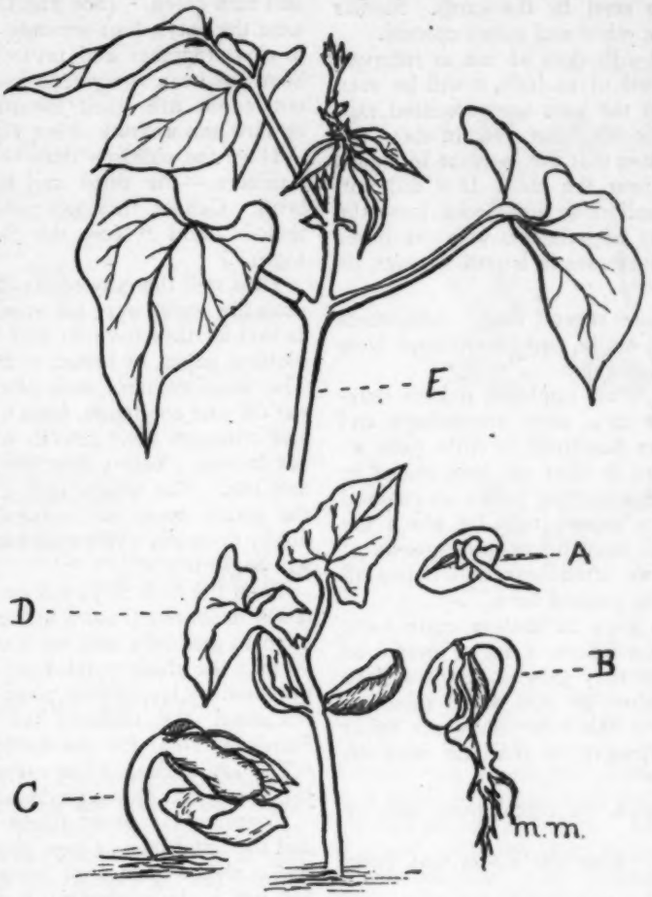
Have you been long "thinking about" the nature study and feeling that you should but could not begin it? Begin this spring, this week, with seeds and buds.

Beans and peas will grow in any school-room. They are so simple that the teacher who is most burdened with her own ignorance can study them, and yet so wonderful that the botanist may discover new beauties each year. In no other study will you find a richer content, more of interest and beauty and suggestion and parable. You can make the seed study in the school-room an opportunity for interesting the children in the brightening of their homes with plants, and a starting point for much which is most practical, if anything can be more practical than making lives brighter and broader and happier.

In country schools the opportunity and call for such work is particularly great. To country boys and girls the study of germination can be made most interesting, opening blind eyes to beauties and wonders overlooked before, and yet most practical and helpful in their life work.

In the study of germination, as in most work in nature study, almost everything depends on the aim of the teacher and the relative emphasis placed on the questions, What? Why? How? If the teacher merely asks her pupils to answer the question, What? to name and describe the parts of the seed and of what comes from the seed they will get little from germination. In proportion as she leads them to constantly think about the "why" and the "how," about the changes and processes of development and the reasons for these, and to look through the thing of sense to the truths they symbolize, will germination mean most to pupils and teacher.

Get early dwarf beans and peas, an abundant supply, so that they can be distributed freely to the children, plant in rather sandy soil in window-boxes or flower pots and water moderately. Too much water rots the beans. Plant some seeds in damp sawdust and others on damp, not wet, blotting paper in glass cans or bottles or jelly tumblers, which can be covered to prevent evaporation. For this peas are best; beans are apt to sour and decay. From these the growth of roots can be studied and the use of the store of food in the seed brought out. For two or three weeks the plants need little light. After that they should be kept in a sunny window, if possible, or at least be given a "sun bath" every day or two.



Teachers who have the back numbers of PRIMARY EDUCATION will find in an article by the writer in the issue for April, 1895 more explicit suggestions and directions for planting seeds.

With the youngest children in the first grade and perhaps in the second grade it will be best to study carefully the germination of one kind of seed, continuing it until school closes in June, and gathering about germination as a center the other plant work, but not limiting the plant study to this. For this the bean is probably best, as its parts are so distinct.

With older children the development of two kinds of plants (beans, peas, morning glory, flax, corn) can be watched and compared until flower and fruit is formed. Early dwarf varieties of beans and peas mature or form pods and seeds in from six to ten weeks.

Lesson one may well be devoted to the planting of the seeds by the children and to a gathering up of what the children already know, or think they know, about the growth of beans or of seeds in general, about what they need for growth, and, perhaps, with older children, about the seed vessels or pods from which the beans came. Most children know or think that seeds need at least "dirt" or soil and sunlight and water. They will learn later that beans will thrive for several weeks with nothing but water.

Read and discuss with the children some literature — real literature, not mere rhyme; only the best is good enough — which will give tone to their work and direction to their thought, without telling them what they should discover for themselves. For the youngest children Hans Andersen's "Five Peas in a Pod," or "Hiawatha's Fasting" (the story of Mondamin) are good. Older pupils will appreciate somewhat portions of Bryant's "Song of the Sower," or Lucy Larcom's "Mystery of the Seed" or Whittier's "Corn Song," or "Lines for an Agricultural Exhibition" by the same author.

When the beans in the glass have pushed out their roots from a quarter to a half inch (see A in illustration) study the arrangement Mother Nature has made for their exit

from the enclosing skin. The little root grows out through a minute hole (called by botanists the *micropyle*, meaning "little gate") in the skin on the middle of the flat or concave side of the bean. After the skin cracks open it can be seen that the stems of the undeveloped seed rests in a pocket specially prepared for it in the skin. The *micropyle* is at the end of this pocket.

Have pupils draw this first stage in the development of the bean and tell — write about it if they can — "How the Bean Gets Out of the Seed Coat."

It will be interesting to study from the sprouting beans (peas may be better) in the tumblers the way in which the little stem grows. If the bean is fastened, by a pin passing through the thick part, to a cork in a saucer containing a little water and covered with an inverted glass, the little stem projecting beyond the edge of the cork will grow downward. If the position of the seed be changed so that the end points upward it will slowly turn and again grow downward. The root end of the seed grows downward whatever the position of the seed in the earth. Similar experiments will show that the other end grows upward.

If the little root be marked with dots of ink at intervals of a quarter, or better, an eighth of an inch, it will be seen that the dots nearest the tip of the root are separated rapidly as the root grows while the other dots remain about the same distance apart. This shows that the increase in length of the root takes place very near the end. If it did not, the branch roots would be continually torn loose from the soil as the plant grew. Similar experiments with the other or stem end will show that it increases in length through its whole length.

These experiments will require several days. Afterwards have the pupil tell by drawing, orally, and in writing, "How the Roots of the Bean Grow Longer."

As the roots lengthen those in the tumblers, if kept carefully covered so that they grow in a moist atmosphere and yet are not too wet, may show hundreds of little hairs all about them. (These are more distinct on corn raised in the same way, that is, on damp blotting paper in covered vessels.) Each of these is a minute tube by which the plant takes in food. The roots have no openings, none of the "little mouths" of which we often hear, and hence all their food must be in a liquid or gaseous form.

If the roots are allowed to grow in shallow earth on a polished piece of marble, they will form a slight groove or at least remove the polish where they grow along the surface of the marble. The roots produce an acid which dissolves limestone and other portions of the soil. Show the effect of an acid, such as strong vinegar or muriatic acid on marble or limestone.

In all the above experiments on roots, peas may be better than beans.

Cannot the pupils now tell "How the Roots Get Food for the Plants"?

While waiting for these experiments we have been watching the seeds planted in earth. Slowly they push out of the ground, always backward, often lifting up the earth about them. We first see an arch like the upper part of Figure B in the illustration. I well remember how in my early childhood I thought the beans had made a mistake, and how I pulled them up and turned them around. Strange to say, they did not appreciate my help.

Gradually the arch grows and pulls out the bean, the skin splits open and falls or is pulled off and soon the bean separates into two halves (*the cotyledons*), disclosing between them a little green sprout or bud (called the *plumule*,) meaning "little feather." In the bean the name is particularly appropriate. Why?

Why does the bean come out backward? Is the strong, somewhat wedge-shaped arch of any help in pushing up the soil? Is it of any advantage to the little bud to have the thick parts enclosing them come out backward or base first? How much more easily the sand and particles of soil would get in between the cotyledons and injure the plumule if the bean came up in any other way.

Have the pupils draw this second stage in the growth of the bean and tell "How the Bean Comes Out of the Ground," dwelling on the "why" as well as the "how."

Continue observations on growth of roots on the seeds in the tumblers, noting how rapidly they grow and how they branch. One or two of the plants in the box may be dug, not pulled, up, and the earth carefully removed by moving the plant back and forth in a pail of water. This will show the root system, with its many branches. Why do the roots branch and spread out so widely?

Note, too, the snug home the little bud or plumule has between the two thick cotyledons. Is it well protected? The plumule (largest and most easily studied by children in the Lima bean) is seen to consist of two leaves, pale green until they get out in the sunlight, each folded lengthways along the middle, the edges of the two leaves overlapping one another. As the leaves grow thicker and need more room the inner surface of each cotyledon becomes more hollowed or concave, to make room for them. Gradually the leaves separate, push out from between the cotyledons and turn green. (See Fig. C in illustration.) At the same time the cotyledons separate from one another, but are apt to close together and protect the delicate leaves at night. Soon the bean straightens itself so that the free ends of the cotyledons are lifted toward the sky and the leaves turn upward and unfold. (See Fig. D in illustration.)

Have the children draw — only from nature, never from a picture — the third and fourth stages in the life of the bean. Cannot they tell "How the Bean Leaves are Protected" and "How the Bean Leaves Grow up to the Light"?

How well the cotyledons have protected the young leaves until the leaves were old enough to take care of themselves. Is that all they have to do? Turn again to the seeds on blotting paper, or better, to those planted in damp sawdust. The same changes take place. From some of the plants cut off one cotyledon, from others remove both cotyledons and compare their growth with that of the plants having cotyledons. Before long the former turn yellow and wither and die. The others may grow for weeks. Note how as the plants grow the cotyledons shrivel, get smaller, and finally drop off. When this happens the plants in sawdust will begin to die.

Even the little folks will be driven to the inference — and it will mean much more to them if it is an inference coming to them gradually and not a statement made by the teacher — that the thick cotyledons are also storehouses of food provided by the mother plant for the young plants.

Cannot the children tell now "How Mother Nature Stores up Food for the Little Bean Plant," or write about "The Little Bean Plant's Pantry," and make drawings of the young and old cotyledons?

Continue the observations on the growth of the leaves, and the unfolding of new leaves. Note how the little leaf bud is always protected between old leaves, much as the first leaf bud or plumule is protected between the cotyledons. Watch for the flower buds. Always ask, Why?

Compare, in grades above the first or second, the growth of bean and pea, raising both in the school-room.

Turn or rather keep the thoughts of the children on out-of-door plant life, applying out of doors what they learn indoors, and comparing the growth from the seeds of all all the weeds and other plants they can find.

The maple seedlings are particulaaly good for study. Their parts are large and distinct. In the maple the two cotyledons are longer, are crumpled in the seed and develop into leaves, which drop off after a month or two. Many common weeds grow in the same way.

Bring in constantly all the literature that can be found, not merely on germination, but anything bringing out the thought and symbolism of spring. Helen Hunt Jackson (H. H.) and Lucy Larcom have many beautiful poems.

"I love the spring when slumbering buds
Are waking into birth,
When joy and gladness seem to run
So freely o'er the earth."

MEMORY DAY

(Decoration Day May 30, 1897)

"Bring Your Loving Thought"

Weave your garlands bright
  Before the May-time closes;
Pansies blue and white
  And blushing buds of roses.

Blue and white and red,
  The lonely graves they'll cover;
And o'er each grassy bed
  The stars and stripes shall hover.

Let this work be wrought
  Before the May-time closes,
And bring your loving thought,
  More precious than the roses.

—*E. S. B.*

Remember All

Remember all; here in the warm May weather,
Number once more the well-beloved dead.
Love forgets no brother
Born of our common mother;
Here, in the warm May weather,
Bow we in grief together,
Kneel we in grief together;
To them that wrought so well,
To all that fought and fell.

—*John Vance Cheney*

The Blue and the Gray

Scatter your flowers alike to-day
Over the graves of the Blue and Gray.
Time has healed all the nation's scars,
Peace has hushed all the noise of wars,
And North and South, and East and West,
There beats but one heart in the nation's breast.

— *Mary N. Robinson*

"The Brown Head Bowed"

MINNIE W. ROZELLE

Boy Bright and a young lady climbed the grand stairway of Iowa's Capitol one frosty morning last year. After some time spent in examining the pictures and statuary they sauntered leisurely into the senate chamber. "But the best of all is over here," said Boy Bright, as they left the beautiful room and turned toward the cabinets where the battle flags are kept.

Off went the jaunty cap and the brown head bowed, as the child stood in the presence of the once bright banners. A trio of young men standing near hushed their laughter, watching the reverent little face before them. "Come, Boy Bright, said the lady, after a time, but before they passed out of hearing a gentlemen, who had witnessed the graceful act, laid his hand on the boy's head, saying tenderly, "That's right, my little man. Who taught you to salute the flags?"

The pledge of loyalty shone in the honest brown eyes and rang like music in the clear, childish voice, as Boy Bright answered, "Oh. my teacher said once that she hoped no one of her boys would ever forget to take off his hat to Iowa's battle flags. She said men died right under their shadow, and we'd remember the soldiers when we bowed to the flags."

The little lad went away, but the scene will remain forever in the hearts of those who saw it. Looking across the years they saw Boy Bright standing with the defenders of the dear old flag, his life purpose strengthened, his character better, braver, and broader, because of the impress skilfully wrought upon it by that loyal heart — his teacher.

A Color Scrap Book

Dear Editor: —

Teachers often find it difficult to present the spectrum colors in an interesting and profitable way to the little five-year-olds. Of course, just for the moment, the eye is attracted by the bright bits of paper, cloth, and other objects collected, from which they select the color for that particular day's lesson; but has the fundamental truth, underlying all lesser results to be gained from these lessons, been brought home to their minds? Have they been made to realize that with these colors God first spread his palette and wrought so marvellously? More frequently, I fear, these little minds get no further than Tommy's necktie, Jennie's dress, or Fannie's hair-ribbon.

The experiment I tried last year was attended with such satisfactory results that I feel as though I would like other primary teachers to profit by my experience.

In September we began a color scrap-book, all of the scraps being furnished by Mother Nature herself. The children brought flowers from their own gardens and scoured the woods and fields for every blossom and leaf that could be mounted on the standard red page, and so on through all the six colors. The name of the specimen was required, and each child wrote her own name under it after it was mounted. All through the fall this was kept up; little search parties were organized, and hardly a day passed, until the snows came, without leaving several additions to our collection. We took one color at a time. In the spring I waited anxiously to see if their interest in nature would re-kindle of itself. Yes, the tiny spark had only been smouldering and the spring flowers in all their daintiness mingled on our pages with autumn's more sturdy types.

Through those lessons the children were enabled not only to detect the slightest variation in shade from the standard colors, but the year's intimacy with nature had broadened them in many ways and their world held for them many beautiful treasures that otherwise would have remained unnoticed or been carelessly passed by throughout life.

I have enclosed a specimen page of our color scrap-book.

HANNAH REEVE BEEBE

Things don't turn up in this world unless somebody turns them up.

Suggestions for a Bird Exercise

M. Helen Beckwith

IN the following suggestions for a Bird Exercise, if the teacher prefers, instead of personating the birds, the children may simply describe them, saying, "I know a little bird that didn't go away at all," etc., but I think they will enjoy *playing* they are birds, particularly in the two lowest grades. For decorations, all of nature's *floral* treasures it is possible to get.

Stuffed birds? Each individual teacher must decide for herself if it is best to use those.

Many things are more easily taught with them, and one can usually borrow some, but we are trying to teach the children not to *kill* them.

"Consistency thou art a jewel," and the small boy will very likely *think*, if he does not "look you directly in the eye" and *ask*, "*Who deaded that one?*"

Primary Education has furnished so many drawings that we can all have blackboard illustrations, even if we are not artists. These, with colored prints, and pictures of birds in black and white, for borders, etc., will be pretty and safe, if not as realistic as the stuffed ones.

Song. "Lovely May"

("Merry Songs and Games," Clara B. Hubbard.) Any song of May, may be substituted.

All the birds and bees are singing,
All the lily bells are ringing,
All the brooks are full of laughter,
And the wind comes whispering after.
What is this the flowers say?
What is this the flowers say?
It is lovely May,
The flowers say 'tis lovely May,
Lovely, lovely May.

What May Brings Us

Quotations

1

When May came the bare boughs budded,
Where she passed the wind-flower blew,
Whither strayed her dainty footsteps
There the purple violet grew.

2

The time of the singing of birds has come, and the voice of the turtle is heard in our land.

3

May brings us the violets, tender and sweet,
Bright yellow dandelions shine at our feet.

4

But they wait for *thy* coming
Sweet wind of the South.
For the touch of thy light wings,
The kiss of thy mouth.

5

Crowds of bees are giddy with clover
Crowds of grasshoppers chirp at our feet,
Crowds of birds at their matins hang over,
Thanking the Lord for a life so sweet.

Song. "All the Birds Have Come Again"

(*Songs for Little Ones.* Jenks & Walker.)

All the birds have come again,
Come again to greet us.
And a joyous song they raise,
Chirping, singing merry lays,
Pleasant Maytime's happy days
Now return to greet us.

Bird Quotations

1

Sing, little bird, oh sing,
How sweet thy voice and clear,
How fine thy airy measures ring
The sad old world to cheer.

2

The sweetest sound our whole year round
'Tis the first robin of the spring,
The song of the full orchard choir
Is not so fine a thing.

3

The little birds fly over,
And oh, how sweet they sing,
To tell the happy children
That once again 'tis Spring.

4

There are notes of joy from the hang-bird and wren,
And the gossip of swallows through all the sky,
The birds in the meadows are building their nests
And the wilding bee hums merrily by.

5

Hear the thrush that carols at dawn of day,
From the green steeples of the piny wood.

6

Think of your woods and orchards without birds!

7

Even the blackest of them all, the crow,
Renders good service.

Song. "Where do Birdies Go?"

(*Songs for the Little Ones.* Jenks & Walker.)

Where do all the birdies go?
I know, I know.
For away from winter snow,

To the fair warm South they go;
Where they stay till daisies blow,
That is where they go.

Chickadee

(To be recited by a little girl who will personate Chickadee. She flies softly around the room, and as she pauses describes herself thus:)

I didn't go away at all. I was here all winter. I never mind the cold. I can always find seeds and dried berries to eat, and warm places in the pine trees to sleep. Look at me. My back is brown.

(She points out the different parts as she names them.)

The top of my head and my throat are black, and my breast is almost white. Most of my family have gone farther north. I am going too. I shall build a nest there, but I will come back in the fall. Throw some crumbs out for me next winter and I'll sing you my song. Good-bye. Chick-a-dee-dee. Chick-a-dee-dee-dee.

(She sings as she flies to her seat.)

Game. "Five Little Chickadees"

(*Songs for the Little Ones.* Jenks & Walker.)

(Two children stand facing each other, and with uplifted hands form the "door." Five children as chickadees sit by the door, and fly, one at a time, around the room and back to their seats as children sing:)

Five little chickadees sitting by the door,
One flew away and then there were four.
Chorus
Chickadee, Chickadee, happy and gay
Chickadee, Chickadee, fly away.

Four little chickadees, happy and free,
One flew away and then there were three.
Chorus.

Three little chickadees, looking at you,
One flew away and then there were two.
Chorus.

Two little chickadees sitting in the sun,
One flew away and then there was one.
Chorus.

One little chickadee, left all alone,
He flew away and then there were none.
Chorus.

Robin

(Personate as before.)

Cheer-up, cheer-up, for here I come. How glad I am to see you once more. I like the children of the south but I am always glad to come north in the spring.

Have you seen Bluebird. He and I came together. How do I look in my spring suit?

My back is brownish, head and throat black, and my vest this dull red color. There is a white streak on my throat too.

No, I haven't any babies yet, but I have three lovely green-blue eggs in my nest in the orchard. My family will be quite large by autumn, for I raise two broods. My mate is calling me so I must go. This is my favorite song—Cheer-up, Cheer-up.

Song. "Two Robin Redbreasts"

(*Songs and Games for Little Ones.*)

Two robin redbreasts in their nest
Had little robins three,
The mother bird sat still at home,
Her mate sang cherrily,
And all the little robins said,
Wee-wee, wee-wee, wee-wee.

One day the sun was warm and bright,
And shining in the sky.
The mother said, "My little ones
'Tis time you learned to fly,
And all the little robins said,
"We'll try! We'll try! We'll try!"

Bluebird

(To be personated by some child with appropriate gestures. Let her "fly" as before.)

My back is blue, just like the sky,
So are my wings, with which I fly,
My breast is red — not very bright,
And a *few* of my feathers you'll find are white.
I've been here a month, my mate's come too,
Her dress is a little brighter blue.
We are keeping house — now don't you tell —
In that old apple tree near the well,
And some day soon, I hope there'll be
Five *little* bluebirds up in that tree.

Song. "The Bluebird"

(This will be found in PRIMARY EDUCATION for May, '96, and in *Songs and Games for Little Ones.* Jenks & Walker.)

Woodpeckers

(Have *two* children for Hairy and Downy, one to be larger than the other. In all of these bird "plays," it will not be necessary to "dress up" the children. Imagination will supply all deficiencies, and it makes no difference whether boys or girls are chosen.)

Oh, jolly little woodpeckers are we
And you may always know
When from the trees we're seeking food,
For tap, tap, tap we go. (*In concert.*)

(*Larger child.*)

My coat is black, spotted with white. Can you see the white streak down my back? I always wear this little red band on my head. I am Hairy Woodpecker, and this is my little cousin Downy. Isn't he a cunning little fellow?

We build our nests in holes in trees. That is why we have such strong bills, and we can run right up the trunks of trees. Not many birds can do that. Shall you know us next time you see us? We look much alike, but remember that I am bigger. Come, Downy, we must be going.

Song

The old woodpecker is hard at work,
A carpenter is he,
And you can hear him hammering
His nest upon the tree.
Tra la la, etc.

(This song will be found under "The Swallow," in *Merry Songs and Games*, Hubbard.)

Sparrows

(Four *small* children for this, and let "Chippy" do the talking. They will all come "flying" of course.)

We are sparrows, we are sparrows,
So happy and free.
This is our cousin from over the sea.
(points to English sparrow.)
Song sparrow's voice you must often have heard.
(shows song sparrow.)
This white throated one is the Peabody bird.
(show white marking.)

I am the chippy, known to you all,
We come early in spring and leave late in the fall.
Our colors are sober and quiet in hue,
And we look much alike, don't you think that we do?

Bobolink

(*A bobolink comes flying.*)

Bob-o-link, bob-o-link, spink, spank, spink. May's the month for me. I am so happy I can't sit still a minute. See my glossy black coat with white trimmings! Isn't it handsome? Yet, dear me, before the summer is gone it will look like a ragged brown one. How clothes *do* wear out! My mate is down in the meadow. You'd have hard

Bobolink

work to find her, or our nest, with its six fine eggs. She takes care of the house. Her dress is brown and she can't sing as well as I, but I sing to her, and I get food for the little ones when they are hatched. I like seeds best myself, and oh, don't I love rice! I had a feast down south last month. They call me the rice-bird down there and they say — there, my mate is calling. I must go. Bob-o-link! Bob-o-link! Spink, spank, spink.

Recitation. "The White-Throated Sparrows"

Old Mr. Peabody was very much troubled. It was early springtime, and the large field near his house must be planted but he could not make up his mind what to sow. Grain of some kind it must be but *which* kind?

As he stood leaning on a fence post he heard a voice call, "Sow wh-eet, Pea-body, Pea-body, Pea-body, wh-eet, wh-eet, Pea-body, Pea-body." Looking up he saw a bird perched in an old tree, calling this down to him.

"Wheat, do you say?" said the old man. "Wheat it shall be then," and he raised a bountiful crop. After that the white-throated sparrow was called the Peabody bird.

Recitation. "Robert of Lincoln"

(To be recited by the children in concert, or by the teacher.)

Song

(*Songs & Games.* Jenks & Walker.)

Pretty little violet, waking from your sleep,
Fragrant little blossoms, just about to peep,
Would you know the reason all the world is gay?
Listen to the bobolink, telling you 'tis May.

Game. "The Pigeons"

(Let a little child fly out in front as a pigeon and beckon to five other children to fly out in the open space in front of desks with her while children at seats sing:)

1

Fly little pigeons, fly into the ring
Fly little pigeons, while we all sing,
Then go to sleep in your nice warm nest.[1]
We will be quiet and let you rest.
Coo coo, coo coo, coo coo, coo coo, coo coo.

2

Dear little pigeons, sweet rest to you,
We're waiting to hear your soft coo-coo,
Dear little pigeons, sweet rest to you
We're waiting to hear your soft coo-coo.
Coo coo, coo coo, coo coo, coo coo, coo coo.

3

Now the sun is high in the sky,
Wake little pigeons, 'tis time to fly.
Fly over fields and hilltops gay,[2]
Then returning, we'll bid you good-day.[3]
Coo coo, coo coo, coo coo, coo coo, coo coo.

(1) The children kneel down in twos, and with their hands on each other's shoulders for the nests. The heads drop and eyes close as they sleep.

The second verse is sung softly by the children at their seats, but the chorus is sung by the pigeons. Everybody keeps perfectly still for a few seconds, and then the children at seats sing the third verse.

(2) Pigeons fly all around the room (3) and back to their seats.

Impress upon the children that the pigeons are gentle birds, and sing softly and sweetly.

The music can be found in *Merry Songs and Games*, Hubbard. The words are slightly different.)

Baltimore Oriole

(*Comes flying, gives a little bow, and says:*)

Baltimore Oriole, if you please, named for a lord, and the best weaver in birdland!

Head, back, and wings dark, with a little white trimming, shoulder caps and a breast of orange. That is *my* suit.

We came the first of the month, and my wife has just finished the nest. It is up on that high branch of the elm. If we had it down low other birds — and *boys* could find us easily we are so bright-colored and the babies always chirp so loud. O, I love bright colors, and I will have some in my nest. So I look for bits of worsted and silk, as well as hairs and strings, and my wife weaves them into the coziest nest! It is deep like a bag, and the wind rocks it to and fro. It is a fine cradle for the babies. Have you seen ours in the elm tree? I have some yellow silk in it, and it's the prettiest nest in town *I* think.

Baltimore Oriole.

Song

Of all the weavers that I know
The oriole is the best,
High on the branches of a tree,
It hangs its cosy nest.
Tra la la, etc.

(Tune of "The Swallow" in *Merry Songs and Games.*)

(Ask the children to give the names of other birds that they know, or have heard of; ask for the calls of the familiar ones like the "caw caw" of the crow, "Bob White" of the quail, the "whip-poor-will," "Peabody," "Cat-bird," etc.

Game. "Birdies in the Greenwood"

(This can be found in *Songs and Games*, Jenks & Walker, but a similar one was given in PRIMARY EDUCATION for May, '96, with directions for playing it, as well as the game "Flying Birds," which can be sung to a song by that name in both the Hubbard and the Jenks & Walker books before referred to.)

A Rest

(Have some bird wing-flapping for rest exercises for the whole school. Let them be eagles and stretch their arms to their widest extent, etc.

Let the children tell you of anything that they have seen birds doing,—flying, hopping, walking, bathing, eating, etc.

Let the nests you have in the school-room be described and others brought in *if* you can make it plain that you want *old* ones that they have saved at home. It is a dangerous experiment to let them go nest-hunting at this season of the year.

What do birds eat?

Some of the uses of birds may be given, and some of their enemies, *viz.*, birds of prey, cats, snakes, bird collectors, and, humiliating as it is to confess, be honest, and admit that women stand somewhere at the head of the list, so long as they persist in wearing stuffed ones at all seasons of the year.

Perhaps the next generation will hove more respect for the dear little songsters.)

Song. "Bob White"

(*Boys whistle chorus.*)

In the branches overhead,
There you'll see him swinging.

Mid the clover white and red
Hear him gaily singing.

Chorus

Bob White! Bob White!
Hear him calling in the meadow.
Bob White! Bob White!
Calling to his mate.

What does little birdie say
That has set him calling?
Perched so high up in the tree
I'd be 'fraid of falling. *Chorus.*

Now he whistles from the fence
In the orchard yonder,
In the name of common sense
What d'you want I wonder. *Chorus.*

Song. "We Are Red Birds"

This song in PRIMARY EDUCATION, May, '96, will make a pretty game, and the "Birdling's Good-Night to the Flowers," in the same paper will be a good closing song.

Scarlet Tanagers

Board Reminders

MINNA C. DENTON

Oh, dear! here is that note I meant to have sent to Mrs. Brown about exchanging Mary's copybook! And I didn't ask Tommy Jones about his enrollment card, nor Nellie Peters for her excuse for yesterday's absence. I was going to remind the children to bring flowers for the botany lesson to-morrow; and they ought to have been told to get those new readers. And I never once thought about going around and looking at their hands, to see if they remembered my talk on cleanliness yesterday. I wonder if Robert Graham really did wash his, and I never noticed it! There! I knew there was something more I ought to have done in the number lesson; I haven't asked a question about pint and quart measures for a week."

Well, there are limits to the possibilities of the human memory; and with a score of fresh details demanding attention every moment, it is perhaps no wonder if the teacher forgets some of the items in so formidable a list. Perhaps a memorandum board opposite the desk might be of assistance on such occasions. How would a list like the following serve, each detail ranged in the order in which it will be needed:

"Note to Mrs. B——.
T——'s enrollment card.
N——'s excuse.
Bring flowers.
Pts. and qts.
Look at hands," etc.

There was once a teacher who was required to impress upon the plastic minds under her charge the word "vitrified." She taught it to them in the usual way — explained, produced the vitrified article, asked questions about it, finally wrote it on the front board and erased it at once, requiring the pupils to reproduce on their slates. This they did with ordinary success; but for some reason the word refused to stick. Examinations were coming on, and the teacher was in despair. At last she sent all the children out at a recess, and told them that when they came back the magic word that had so successfully eluded their memories would be written on some board — it should be their task to find where. Then she put it in the most out-of-the-way corner she could find; but imagine, if you can, a spot secluded enough to have escaped the scrutiny of forty pairs of eager eyes! The originator of this device avers that to this day not one of those children has forgotten "vitrified."

When the lines file into this room, they are likely to look eagerly at the front board; for interesting things have been found upon it. Sometimes it says "The boys marched beautifully this morning," or "Who broke line?" or "Whose hands are in position now?"

Their teacher fondly cherishes the idea that some such variation is productive of better results, than if she always used her voice to tell these things.

Plant Beauty

Plant harmony is of two sorts, beauty of color and beauty of form. In some plants, like the calla, beauty of form predominates; in others, like the peony, beauty of color; in still others, like the gladiolus, the lines of stalk, flower and bud are as noticeably lovely as their colors. Plants conspicuously beautiful for there form should not be gathered together in tight bouquets; each should be enjoyed by itself or with two or three companions so grouped in a vase or other receptacle that the beautiful lines of each are enhanced by those of the others. Plants of lovely color, on the other hand, are more effective when massed. One snowball is insignificant; a bushel basket full of branches crowded with the balls of creamy white glowing against the rich green of their foliage is highly effective.

Beautiful color has such qualities as purity, gradation, depth, and when colored flowers are massed, harmonious relations of the different hues should be secured.

There are five typical color groups or harmonies. The first may be called a contrasted harmony. All green leaved plants with white flowers are in this group. The second is dominant harmony, produced by combining tints and shades of one color, as for example a head of hyacinths or a bunch of double violet asters with no green foliage in sight. This combination of tints and shades, so common in the decorative arts and in dress goods, is rarely found in nature, and is least satisfactory as a harmony. The third is analogous harmony, composed of related hues of color. All green-leaved plants with yellow flowers are in this group. A bunch of gladioli tinted with violet-red, crimson, rose, scarlet, and salmon, forms an analogous harmony of exquisite beauty. The fourth is complementary harmony — a harmony brought about by the juxtaposition of complementary colors. A violet-red camelia seen against its glossy green leaves is a complementary harmony: so also is a bunch of violets with their rich yellow-green leaves. The fifth is perfected harmony; a color group composed of analogous hues combined with a color complementary to the general effect of all the group. For example, the gladioli forming analogous harmony if placed against a background of old Ampelopsis leaves, of rich bluish-green color, would be greatly enhanced in color effect, and the whole would form a perfected harmony. A bowl full of pansies is in perfected harmony. The analogous group runs through varying hues, from pure yellow in the flower centers to the yellowish-green of the foliage. The complementary to the effect of this group is to be seen in the rich purple of the petals."

— *Henry T. Bailey*

The Blue-Bell

There is a story I have heard;
A poet learned it of a bird
And kept its music, every word.

About two thousand years ago
A little flower as white as snow
Swayed in the silence to and fro.

Day after day with longing eye
The floweret watched the narrow sky
And fleecy clouds that floated by.

And swiftly o'er its petals white,
There crept a blueness like the light
Of skies upon a summer night.

And in its chalice, I am told,
The bonny bell was formed to hold
A tiny star that gleamed like gold.

— *Sel.*

School Gardens

TWO schools have acquired considerable notoriety by their successful introduction of garden work into the school program. One the Swan school at Medford, Mass., the other, the George Putnam school at Roxbury, Mass. The report from Medford says:

The general treatment was as follows:— The soil was first well broken up and dug over to the depth of nearly two feet, and some twenty or more loads of rich loam and two good loads of old manure, rotted to pulveration, were mixed in thoroughly. The beds to be devoted to the ferns were not made so rich, because the intent was to imitate nature as far as possible.

Nearly all the planting except that of the trees was done by the children under the guidance of their teachers.

In addition to the native flowering plants 150 gladiolus bulbs, 100 tuberose bulbs, 125 pansy plants, 25 cannas, and 50 plants each of sweet williams, hardy carnations, verbenas, and daisies were planted. Cryptogamous plants were represented by 28 species of hardy native ferns.

100 feet of garden hose with a reel, 6 watering pots, 3 sets of garden tools including a spade, and 2 extra large tubs for water-plants were furnished, all of which will come into use next season.

Since November 1, there have been planted for spring blooming over 200 bulbs including hyacinths, narcissi, and tulips in variety, a good part of them having been furnished by the garden Committee, a large number of scilla bulbs, several fresh crowns of the ostrich fern, mossy clumps of Poloypodium vulgare, Woodsia Ilvensis, Phegopteris hexagonoptera, and Iris Kaempferi.

The garden has also been put in order for the winter by having the shrubby plants staked and the various beds raked over and covered for protection.

The expenses of the garden have been met from appropriations from private citizens by the School Garden Committee.

(From the Geo. Putnam School, Roxbury.)

"The plants named below, numbering thirty species, were for the most part put into the garden during the warm season of 1895.

Spiranthes cernua.	*Achillea millefolium* var. *roseus.*
Goodyera pubescens.	*Potentilla Norvegica.*
Clintonia borealis.	" sp.
Cypripedium acaule.	*Cornus Canadensis.*
Iris uersicolor.	*Medeola Virginiana.*
" *Pseudacorus.*	*Oxalis Acetosella.*
Maianthemum Canadense.	*Viola rotundifolia.*
Moneses grandiflora.	*Linnæa borealis.*
Pyrola elliptica.	*Aralia trifolia.*
" *secunda.*	*Asarum Canadense.*
Chiogenes serpyllifolia.	*Thalictrnm purpurasencs.*
Solidago arguta.	*Hedeoma pulegioides.*
Aster paniculatus.	*Parnassia Caroliniana.*
Anaphalis margaritacea.	*Woodwardia Virginica.*
Gnaphalium polycephalum.	" *angustifolia.*

"Some cultivated plants have been added, and half a gross of hyacinth and tulip bulbs were planted in October; but the stress of the work done has been in furnishing ample means for studying wild plants as they grow.

"The pupils of the first class have studied fifteen species of ferns by means of pressed specimens, specimens brought in for the lesson, lantern slides of three kinds,— first of the reproductive organs, second, of pressed specimens, third, of growing clumps in their native habitats,— and lastly, by observing all the species growing in the school garden. They have studied them about six weeks, have drawn and studied all the minute parts, spores, sporangia, indusia, sori, pinnules, pinnæ, rachis, stipe, general shapes, textures, and relative positions of parts. Most of the drawing has been done on the board off-hand on call. Every pupil made a sheet of drawings of such characteristic parts as he chose some of the drawings were colored, and the best were put on exhibition at the Mechanics' Fair. Every pupil at the end of his study wrote a composition on ferns, and it remained an uncorrected first draft.

"Various classes in the school during the autumn studied composite flowers and the distribution of seeds by means of the material obtained in the school garden and by visiting it. The dahlia tubers and gladiolus corms have aided two classes in the fall study of roots.

"The garden has been established five years, and the size, beauty, and vigor of the plants must be ascribed no less to proper time in which plants can grow than to good care and changing them to suitable conditions. During these five years an attempt has been made to carry out the instructions of the committee, namely, to stock the garden with wild native plants and economic plants, to illustrate the actual use made of the garden by means of children's graphic work, and to present photographs of such plants as would give the committee a somewhat adequate idea of the contents and condition of the garden.

"Some cultivated plants, although not required, have been introduced to play a minor part, chiefly for the ornamentation of the grounds and the decoration of teachers' desks. The cultivated plants have not been named, but each native wild plant bears a copper-wired tree-tag on which its name is written.

"No attempt has been made to arrange the wild native plants, such as asters, golden-rods, and ferns, in decorative or ornamental beds, first for the reason that the committee in their instructions have expressed their disapproval of mere ornamental beds, and second for the reason that beds of any considerable size have been found to be of little use for practical work. When fifty-six pupils at a time are to study growing plants, the plants must be accessible, and therefore scattered as much as is consistent with other conditions, especially that of caring for the plants and mowing the grass about them. Three or four times as many children can examine twenty plants set in rows as can examine them arranged in a bed; and the work of weeding the plants and cutting the grass in the former arrangement is not half as much as in the latter.

"During the long summer vacation the janitor of the school building, weeds and waters the plants and cuts the grass periodically. In spring and autumn he wheels in and spreads fertilizing material, prepares new beds or rows, and resets old ones. For this work he receives ten dollars every year. When a garden has been established five years and has received yearly many additional plants, the labor involved is considerable, and it should be kept at a minimum for the salvation of the garden.

From five to eight dollars' worth of fertilizer is put into the garden at a time; this year six dollars' worth. The first prize of fifteen dollars awarded to the garden has defrayed expenses up to this time. By this it will be seen that the garden is put on an economical and useful accordance with the practical experience that comes from adapting means to ends."— *Extract from Exhibit Report.*

The benefit of such work in connection with public schools can hardly be over-estimated. It has taken a century to raise the national flag over the public school. Shall it take another to surround the school-house with plants for use and beauty?— THE EDITOR.

The University of Chicago School

The work on the growth of plants continues from the points mentioned in last week's *Record*, and is now upon the relation of the growth of plants to light.

1. Oxalis plants are placed in the window, and the position of the leaves compared with those of a plant which have been kept in the dark. The turning of the leaves and the bending of the stem toward the light are compared with the drooping and folding of the leaves of the other plant. The latter is then placed in the bright light and the gradual unfolding and expansion of the leaves noticed.

2. Leaves are placed under water in light and the giving off of bubbles (breathing) noted; then the dish is set back into less light and the relative number of bubbles given forth noted. From this it is gathered that the bubbles measure the amount of work the leaf is doing. The harder the leaves work, the faster they breathe. It is the light that seems to be making them work. Comparison of these facts with those of human action.

3. What color are leaves that have never been in the light? Recollection of plants growing in dark cellar. Potato sprouts, etc.; the effect on grass of a plank lying upon it and shutting off the light.

4. The relation of the light to the green in the leaf. Take a test tube, put in it pieces of leaves of loose texture, pour in some alcohol and let it stand; notice the alcohol becoming stained green, and the pieces of leaves getting pale. Try the same experiment with water instead of alcohol, noting that the green does not come out. Relating the fact that it has been discovered that it is the green material which has been dissolved that does the work in the leaf with the help of light; that it is the only thing that can take air and water and soil and make food out of them; that on the work of this green part living things depend.

Do leaves work night and day? Show that because they can work only with the help of light, they get rest at night. Do plants need this rest? Relating of experiments tried in greenhouses using strong electric light; plants continued working for a while and then stopped working entirely, being worn out. Comparison with the human need for sleep.

6. Relation of plants to food. Do the plants make more food than they use themselves? What becomes of the surplus? What do animals and people live upon? What do plants live upon? What would be the result if plants could not get food from the soil and air, and store up more than they needed? Different parts of the plant used for food. Relating of these facts to the cooking work.

— *The University Record*

The Brotherhood of Builders

"HERE I am, B. Oriole, at your service," called the beauty, hanging to the branch like a bit of richly colored tropic fruit, and burying his black head in a flower cluster, while he skilfully took up a collection of insects, turning so that his orange feathers flashed like flame.

"What does B. stand for?" asked Tommy-Anne.

"B. stands for Baltimore, my first name. I have to use the letter to distinguish myself from my brother O. (orchard) Oriole, who wears darker feathers, and who *was* supposed to live mostly in orchards."

"Did you come from Baltimore?"

"No, indeed, we are from the country; but that city and we birds both took our name from the same person. Long ago when there were few House People in this land, a very up-top House Person came sailing into the waters near some woods where thousands of us lived. (That was before the days when these same House People made war upon us and nearly turned our whole family into bonnet trimmings for their women.) He admired us so much that he chose our colors for his totem, and in return gave us his very best name, which was Baltimore, Baron Baltimore. But as Birdland is a Republic, of course we left off the Baron and contented ourselves with plain Baltimore."

"Who rules in Birdland?"

"We have no visible ruler, but the laws are put in our hearts."

"Somebody must have made the laws."

"Certainly, the First Heart made the Plan, and Heart of Nature sees that it is carried out."

"Suppose that you don't choose to obey?"

"Then we always suffer, and usually die."

"Why is not Heart of Nature King, then?"

"Because he created nothing, and has no power of himself; he only directs."

"I don't think that Birdland is a bit of a Republic; I call it an 'off-with-your-head Monarchy,'" said Tommy-Anne, whose idea of kings was based on the death-dealing powers of Henry VIII. and his daughter Mary.

"And I say it is a *Republic*," cried B. Oriole; "because we all lose our heads *equally* — Hawk and Wren alike!" He had become quite excited, and his voice seemed to come through the top of his head; but he soon grew calm again, and continued: —

"In Birdland we are interested in science, music, agriculture, and art. Bug-hunting is our science; you House People give it another name — e-n-t-o-m-o-l-o-g-y, I think. We express our music chiefly by singing and whistling, though we have some good pipers among us, and the Ruffled Grouse and all of our Woodpeckers are expert drummers. We are farmers, also, both sewing and reaping, for we gather fruits and various seeds for food, and we are also the sowers of them in our flights and migrations, while the waste of our bodies fertilizes the ground where they fall, making barren places bloom.

"Our trade is house-building; and this is why our chief society is called the Brotherhood of Builders.

"When we rove in flocks all through the late summer and autumn, or frolic in our winter picnic-grounds in the south, needing no homes, we camp out. Any tree is good enough for a bachelor's perch. But when we gather in our summer haunts, we must have some sort of basket ready to hold the eggs that are always laid at this season, and this basket must also serve as a house for the young, until they are ready to care for themselves; so for this we build nests."

"I know all about that; but why do you have so many kinds of nests? Why do you always lay eggs at this time of year?"

The Oriole did not like to be so constantly interrupted, and stopped short, being really quite offended, and had to be coaxed by the Song-Sparrow, and receive an apology from Tommy-Anne before he would proceed.

Finally he said, "Why are not all birds of the same size and color? Why don't we all sing the same song? Every one of us is suited to the place and way in which he is

intended to live, and the same rule follows in regard to our nests.

"We well understand the art of making the nest, in its general color, like the surroundings in which it must be placed. As these are different, so must the nests be unlike. The reason that we are made to lay our eggs in the spring and early summer is, that food is then the most abundant, and there is plenty of time before cold weather for the birdlings to grow.

"As there must be many differently shaped nests, so it takes many materials to make them, and the materials must be put together in various ways. To do this, Heart of Nature has taught us the trades best suited to the work, and this knowledge has become an inheritance, so that we know by instinct how and where and when to build.

"The smaller, dull-colored birds blend themselves and their nests with the grass, earth browns, and leafage of low bushes. The brightly colored, like the Tanager, and myself, choose high trees. The larger ones, like Ko-ko-ko-ho, build in dark woods where dead limbs and litter conceal them, and so on all through Birdland.

"Heart of Nature has also arranged that we shall live near our work."

"Near your work? What work do *you* do?" said Tommy-Anne, forgetting herself again.

"Our work is the same as the House People's — scratching and hopping about all day, to fill the stomachs of ourselves and families, and try to make them contented," said B. Oriole, in a tone which implied that he considered Tommy-Anne very stupid. "Of course we have the advantage over you in the matter of clothes, for as ours grow on, we are never bothered with shopping, and are always sure of a good fit. Consequently, I mean that we try to place our nests as near to our feeding-places as possible. This living near the feeding-grounds is what makes some water-birds have nothing but Humpty-Dumpty nests."

"Humpty-Dumpty nests!"

"Yes; that is, no nest at all. Don't you know Humpty Dumpty who sat on the wall? I thought that was a song which the House People made. Humpty Dumpty was an egg, you know, that fell off the wall where it was laid; *we* always thought that it must have been a Nighthawk's egg, because they lay them on rocks and such places.

"The first thing we do after we have selected a mate, is to choose the nesting place."

"Why don't you build the nest first, and have it ready for a surprise for your mate?"

"Hoighty toighty!" ejaculated the Oriole, nearly falling off the bough in surprise. "House Child, when were you hatched? Are you a this spring's bird? You are evidently much younger than you look!

"Choose a site and build a nest without consulting the missis? I wonder at you! No, my dear, in Birdland the missis not only very often insists upon building the nest herself, but is *very* particular about the lumber her husband brings for the work, and he is lucky if she does not throw half of it away. Mrs. B. Oriole always does the building, and only last week I took her a lovely bunch of long red silk floss, and she said — but I will tell you that later; I'm wandering, and must go back to my story of the Brotherhood.

"We number in this trades-union of ours, carpenters, masons, weavers, basket-makers, tent-makers, felters, and decorators of many kinds; half of us work at several of these trades, and we are all upholsterers.

"As you might expect, the carpenters have the strongest homes, those the most resembling your houses, for they have a roof, sides, and a doorway. Instead of troubling to build up a house in a manner needing many tools, they bore theirs out, using only one tool, a combination of chisel and hammer, which they always carry with them."

"I wonder what bird it can be. Please tell me its name; I can understand so much better when I know a person's name."

"Think a minute, Tommy-Anne. What rather large birds find their food by walking about trees, and pecking and hammering at the bark?"

"Woodpeckers, to be sure; but you said these carpenter birds lived in houses, with roofs and all that, and Woodpeckers live in nothing but a hole."

"Has not a hole a roof and sides, and how do they get in except through the doorway?"

"To be sure," answered Tommy-Anne, somewhat disappointed, "but where is the hammer and chisel, and how do they use them?"

"The chisel is the bill with which they chip away the softened wood (they always begin the hole in a partly decayed spot), and the hammer is the bird's head which drives the bill.

"You must remember, however, that every bird who has a nest in a hole is not by any means a carpenter. Other birds take possession of the empty holes, that have been used in past seasons, and putting a few straws or feathers in them, use them as their homes. The Bluebird does this, and the Nuthatch with the white vest, and your 'cheerful bird,' the Chicadee.." — *From "Tommy-Anne and The Three Hearts," by permission of the Macmillan Company, Publishers, New York City.*

A Bird Talk with Kitty

An Oral Reproduction

A. C. SCAMMELL

"Kitty, *you* think birds were made just for *you*. Let me tell you. Why, if there were no birds you and I wouldn't be here. Bugs and worms would eat everything up, fast as it grew.

But you see, Kitty, birds *like* bugs three times a day and between. You needn't tell me they bite into cherries and pears. They've a right to their half. They work awful hard, and sing 'fore we're up. 'Twould be awful lonesome without birds; stiller'n meeting.

It's just as wicked to 'sturb bird's nests as 'tis for burglars to burgle folk's houses.

Birds make lovely nests, 'cos they know how to weave and knit and crochet. One bird, 'way off, knows how to sew. He sews leaves together and makes a nest. And he *never* forgets to make a knot in his thread, either,— grass thread —you know. He's a tailor. Bluejay is pretty enough. But he talks too much. And he *interrups* and *tells on you*. That's awfully impolite, Kitty.

O, but the *darlingest* is the humming bird! He has a cunning moss house, little as an acorn cup, all lined with cotton. He lays two white eggs in it, no bigger'n peas. When he goes hunting he can find the honey and the little mites of bugs, that the other birds can't find, 'cos he has a bill as long as a needle. *Would* you s'pose, Kitty, that nice, grown-up ladies would kill these darling birds to put on their hats?

You didn't know that birds had only one new dress a year? But they're carefuller than girls.

All the birds have little oil bags on the end of their tails. They squeeze out the oil with their bills, all over their feathers, so they can fly better. And teacher said,— now do you believe it, Kitty?— that there's an oil bottle fastened to the inside end of every single hair of folk's heads. When you brush your hair long enough, the bottles will break and the oil will all run out and make your hair shiny. S'pose *you've* got bottles, too, Kitty?

Now I'm most done. You want to hear about the funny woodpecker bird, that raps and raps and raps at trees till he hears somebody stirring inside. Then he pushes the door in with his bill, and walks right into the house in the tree, and eats the whole family all *up, up, up!* But it don't hurt them a mite. They *want* to be eaten up.

Now, Kitty, I've told you 'zactly what teacher told me to-day."

May Birds

Mother Nature is glad to-day
To greet the birds of her darling May.
The shrubs are dressed in rosy gauze,
Amber laces drape the boughs.
Dainty nests are building, hid,
Clouds of softest green amid.
Bloom and tassel o'erhang the woods,
Fragrance covers the nestling broods.
Melody of linnet and lark
Chime and cadence from dawn till dark.
Catbirds' mimic and bobolinks' fun
Bubble and trill till dawn is done.— *Sel.*

Value of Bird Day

When the question of introducing Arbor Day into the schools was brought before the National Educational Association in February, 1884, the objection was made that the subject was out of place in the schools. The value of the innovation could not be appreciated by those who did not see the practical bearing of the subject on an ordinary school course. But at the next meeting of the Association the question was again brought up and unanimously adopted — to the mutual benefit of the schools and of practical forestry. With the advent of more progressive ideas concerning education there is a demand for instruction in subjects which a few years ago would have been considered out of place, or of no special value. If the main object of our educational system is to prepare boys and girls for the intelligent performance of duties and labors of life, why should not some attention be given to the study of nature, particularly in rural schools where the farmers of the next generation are now being educated?

The study of birds may be taken up in several ways and for different purposes; it may be made to furnish simply a course in mental training or to assist the pupil in acquiring habits of accurate observation; it may be taken up alone or combined with composition, drawing, geography, or literature. But it has also an economic side which may appeal to those who demand purely practical studies in schools. Economic ornithology has been defined as the "study of birds from the standpoint of dollars and cents." It treats of the direct relations of birds to man, showing which species are beneficial and which injurious, teaching the agriculturist how to protect his feathered friends and guard against the attacks of his foes. This is a subject in which we are only just beginning to acquire exact knowledge, but it is none the less deserving of a place in our educational system on this account.

Is it not worth while to do something to protect the birds and prevent their destruction before it is too late? A powerful influence for good can be exerted by the schools if the teachers will only interest themselves in the movement, and the benefit that will result to the pupils could hardly be attained in any other way at so small an expenditure of time. It it is deemed unwise to establish another holiday, or it may seem too much to devote one day in the year to the study of birds, the exercises of Bird Day might be combined with those of Arbor Day.

It is believed that Bird Day can be adopted with profit by schools of all grades, and the subject is recommended to the thoughtful attention of teachers and school superintendents throughout the country, in the hope that they will cooperate with other agencies at work to prevent the destruction of our native birds.

T. S. PALMER,
Acting Chief of Division.

Washington, D. C.

Bird Game

KATHERINE BEEBE

(For this game divide the children into six groups, letting each group represent one kind of bird. The children, in their seats, sing or recite the first verse together and then all fly away to some selected part of the school-room. The first group flies back to place, sings or recites its verse and then sits down. The other groups follow in order, and when all are seated the last verse is given in concert, after which all the children fly freely about the room for a time, playing birds, *being* birds, and dramatizing bird life according to inclination and ability.)

I

Brave little Snow-birds in white and gray!
Summer is coming so *we* cannot stay!
The place for our nesting is far in the north,
You think it is cold here, but it is our south

II

We are Free Creepers, so speckled and small,
We were almost the last to go south in the fall;
We are almost the first to come back, and you see
We go creeping around and around up the tree.

III

We are the Grackles so shiny and black;
We wonder if farmers are glad we are back!
They will hear our gay chatter from night until morn
As we keep a sharp eye on their wheat and their corn.

IV

And now Robin Redbreast comes back with the spring.
On the high tree-tops he'll whistle and sing.
He knows everybody is happy to see
Both him and his mate on her nest in the tree.

V

Blithe, bonny Bluebirds the south wind has sent,
Each hoping to find a new bird-house to rent.
Or else a snug hole in a post, fence or tree,
Where wee baby Bluebirds well sheltered may be.

V

Gay flashing Orioles, whistling clear,
Tell you that springtime is certainly here.
We wait for the elm-leaves to cover the nest
On the high swaying branches which we love the best.

VII

Swift darting swallows way up in the sky
Tell that the summer is very close by.
Frosts must be over and warm weather come
Before we risk leaving our safe southern home.

VIII

Now the days are full of music!
All the birds are back again;
In the tree-tops, in the meadows,
In the woodlands, on the plain.
See them darting through the sunshine!
Hear them singing loud and clear!
How they love the busy springtime,
Sweetest time of all the year!

Number V

LEWIS W. COLWELL Principal Linne School Chicago

Fellow Teachers: — In another column of this journal you will learn the cause of the cessation of Mr. Tear's articles upon the "New Arithmetic of Mr. Speer." The editor has invited me to continue the presentation of its principles as exemplified in the practice of many of the Chicago schools.

Inasmuch as Mr. Tear's presentation of this subject has been so minute and painstaking, you will readily grant me leave, in a lighter vein to fill the hiatus created by this change of pens with a familiar talk with you upon the whys and wherefores of these puzzling solids, rectangles and lines with their *a's*, *b's* and *c's*. Please indulge me first in mentioning some reasons why Mr. Tear's articles and Mr. Speer's books are worth our careful study.

The Study of New Methods

You are doubtless asking yourselves ere this, "Will it pay me to thrust aside other demands upon my attention for the sake of this new thing?" Personal considerations, of course, are too sordid to be mentioned here, but let me whisper it softly — more rational methods of teaching mean not only better results and better conscience; they mean *easier work* and *better pay*. We would better have nature on our side in all kinds of work. The force of gravity, of expanding steam, of rushing winds, and of deadly electricity do our bidding and lighten our cares when we discover and apply the laws that govern them. So in teaching, there are mental laws in harmony with which we need to learn to work. Who shall say that the incoming century will not show as much progress in conformity to mental laws as the departing one has shown us of advance through recognition of physical laws? If then those who are jealous of professional interests may not neglect the study of methods nor yet may those who love ease or pay, who is exempt? Moreover, among the many things that attract or allure us, I believe that you will decide that this new departure in arithmetic is too important to be slighted. I do not make sweeping assertions about the "New Arithmetic," but it is my profound conviction that it is immensely suggestive of a trend of educational effort toward more genuine culture and therefore to be carefully studied.

The Purpose of Mathematics

There is only one truth to be mastered, but it has many facets, as it were, reflecting light in various directions. In the language of Mr. Speer, "*The purpose of mathematical science is to establish definite relations between magnitudes.*" To the uninitiated this abstract statement will mean very little. Condensed or abstract statements never do unless they sum up familiar experiences. It took years of thought and practice to make this utterance possible. If we could apply it at once and without illustration to our every-day work in the school-room, we should combine strong philosophical instinct with great practical sense. Yet I do not propose to explain this doctrine, for nothiug can be simpler. It is the method reduced to lowest terms. But I desire to expand it and paraphrase it, for simple principles and their application often escape our attention.

Why Study Solids, Surfaces and Lines First?

Let us consider the question I fancy you are asking, "Why does the New Arithmetic direct our attention so much to the comparing of solids, of surfaces, and of lines?" For this reason; — the New Arithmetic proposes to equip the minds of the pupils with experiences in making, handling, seeing, and comparing that will serve as a working basis for exact and definite thinking. It seeks to develop the mathematical instinct. It is based upon comparison of geometrical magnitudes because they can be perceived distinctly and their size judged directly; also because there is nothing else that can be thus distinctly perceived and so serve as a basis for accurate judgments of quantity.

Some Quantities are Hard to Imagine

Let us apply this. Consider the following problems taken from a popular primary arithmetic:

1. A farmer has one field of 5 acres and another field of 4 acres. How many acres are there in both fields?
2. Annie's age is 14 years, which is 5 years more than Jennie's age. How old is Jennie?
3. Mrs. C. bought 7 pounds of coffee and 3 pounds of tea. How many pounds of coffee and tea did she buy?
4. A table was sold for $6 and a rocking-horse for $2. How much was received for both?

These problems, appropriate and right as they are at a certain stage of instruction, are not proper problems to begin with. Indeed they are not so given. They presume a certain degree of preparation and mathematical insight. If children are to answer them intelligently they must get some sort of conception of the spread of nine acres, the duration of fourteen years, the pull of ten pounds, the value of eight dollars. But these things are too large, too abstract, or too elusive to be compared, except indirectly. What does a six-year-old know of nine acres or fourteen years? Bless his little heart, he has not even lived through so much time and cannot remember half that he has experienced. How many of us can boil an egg three minutes without a watch?

Weight can be accurately sensed only with difficulty, by long practice, and in small amounts. As for money value, it does not come within the range of the senses at all. Yet we know, for we are assured upon the best authority* that this sense of equality or likeness of impression is the basis of all mathematical thinking.

Judgment in Mathmatics

Is it possible that as teachers we have left the development of this important instinct to chance? Many children do have it somewhat developed it is true. Is it because we have urged them daily to use it, because we have consciously and conscientiously trained it? Why do so many pupils, when they have learned the so-called fundamental rules and begin problems that require some judgment and some sense of the fitness of things, persist in such sad, sad blunders with figures? Why are they everlastingly asking, "Shall we add or subtract?" Why do they see no inconsistency in this, $\begin{array}{r} 1.15 \\ 2.3\ ? \\ \hline 1.38 \end{array}$ Why do they insist that a two inch square is half as large as a four inch square, and that $\frac{1}{6}$ is greater than $\frac{1}{3}$?

Now honestly, fellow-teachers — partners in iniquity let us make humble and contrite confession. Have we given them, when Nature cried for bread, an indigestible stone? When their development has demanded representative imagery as a means of rational thought, have we thrust into their unwilling fingers a pencil or crayon with the demand, "Now make figures"? Or, lesser sin, perhaps, have we set them to counting beans, shoe-pegs and marbles without furnishing a sufficient and natural motive for it?

Basis in Sense Training

If none of these things are best, what is? Ah! high time to ask. Is it not clear that we should train the sense of value and create a demand for judgment? But judgment is based upon perception. It develops out of multitudes of sense experiences by cleaving to that which constitutes their common meaning, and unless these sense experiences are furnished we are attempting to build a pyramid upon its apex. We should seek to develop sharp and discriminative imagery which will occasion correct conclusions. The what-to-do and the why of problems are necessary and natural consequences of imaging and depend largely upon the sharpnesss with which imagery is defined as well as the persistency and consistency with which it is held. The teacher's effort, therefore, is best directed toward clearness and definite representation. If this is done, in normal and attentive minds the conclusion will take care of itself, while any attempt to force it must result in abnormal or arrested development.

*See quotations on pages 24 and 57, also Note 1, page 80, The New Arithmetic, Part I.

Representation as a Means of Studying Quantities

Of course many, many things cannot be imaged in their entirety because they are beyond seeing and handling. We have just seen this in the foregoing problems. This need not trouble us, however, for right here, at the beginning of our trouble, comes a blessed assurance. Though many things cannot be perceived directly in their actual mass they can be conceived in their relative proportions. When they cannot be conveniently perceived entire for purposes of comparison, they can be perceived indirectly by means of representations that are subject to direct comparison. For instance, the diameter of the earth cannot be imaged in its real extent, but its value can be appreciated if compared to a day's journey by rail. We know the continent of North America, not in its real size (no matter how extensive our travels), but in its relative dimensions in the device called a map. The area of Illinois defies imaging, but it can be comprehended through relating it to the area of Ohio, to a square mile, a city block, a forty-acre field, or the school-room floor. So the architect is enabled to draw his plans by substituting short lines that are within easy compass for long ones that are out of reach or not yet actual, the proportions of the real lines, surfaces, and spaces represented being portrayed as faithfully as in the finished building.

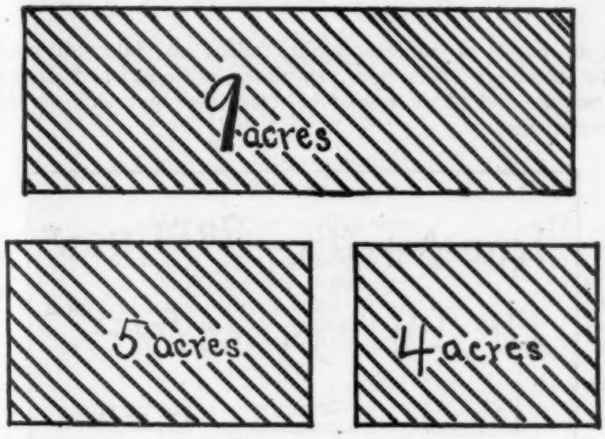


Fig. 1.

So it is much more practicable to deal with rectangles that stand for 4 acres and 5 acres (Fig. 1) than to deal with the real fields. This does not mean that the real fields should not be observed. We should always prefer to observe directly when practicable. Knowledge at first hand is the best. It simply means that the principle of reduction in scale enables us in the face of practical difficulties to preserve the essential meaning of quantities and to find their relative or comparative magnitude easily. It means that we can manipulate the little rectangles, and discovering their comparative value, may infer the comparative area of the fields they represent. This apprehension of comparative value or relative magnitude, by the way, constitutes insight into mathematics, and indeed is the very element of thought that has been erected into the science of mathematics. (See above quotation in italics.)

Transformation

Of course only space elements or geometrical magnitudes are subject to this portrayal in miniature that we call reduction by scale. You cannot well represent time by shorter time because you cannot make a period of it fast until it answers your purpose. Weights may be reduced and so compared, but the comparison is weak and difficult. You can easily distinguish a 3-inch line from a 4-inch line by placing them side by side, but you cannot easily distinguish a 3-oz. weight from a 4-oz. weight by lifting them. Money value eludes sense entirely as already pointed out. Yet all these things and all others with which mathematics deal, yield to graphic representation because of their exact and perfect analogy to lines, surfaces, and solids.

Representations of Time, Weight, and Money

Time is movement, you know; therefore, any quantity of it is properly though not necessarily represented by a line.

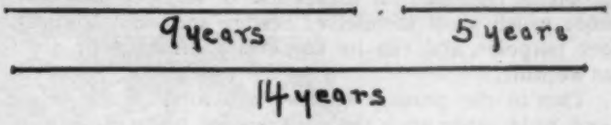


Fig. 2.

Thus time quantities are transformed into lines for graphic representation and purposes of exact comparison. (Fig. 2.) Weight quantities are more properly, though not necessarily,

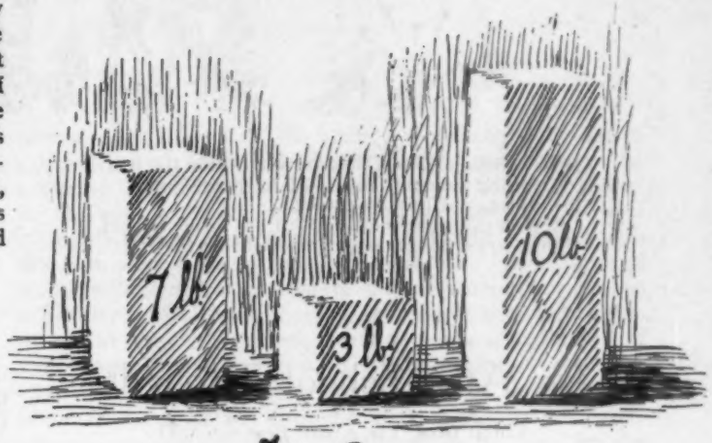


Fig. 3.

transformed to solids for graphic represention and comparison, since things that have weight occupy space.

Just how money value may be transformed and become subject to graphic representation is not so clear at first, but a moment's reflection reveals that money value or purchasing power is proportional to the weight quantity or space quantity of the things exchangeable for the money. A week's salary is 6 times as great as a day's, not because it occupies 6 times as much space in your pocket-book, but because it will pay for 6 times as many pounds of meat or flour, 6 times as many yards of carpet, 6 times as many bushels of potatoes. Hence money value is transformed either directly or indirectly into geometrical magnitudes because proportional to them, and so made graphic. We represent the conditions of the last problem, therefore, like this (Fig. 4).

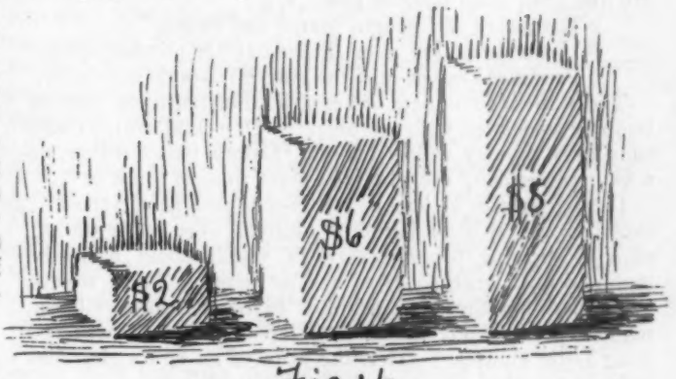


Fig. 4.

Intrinsic Interest

In every case the *image* is the embodiment of the problem. It furnishes a motive for the solution of the problem. $4 + 5 = 9$ means harmony of the whole with its parts, and until this harmony is established the mind is uneasy. Mind is so constituted that incompleteness of meaning in imagery is a strong motive to activity and rational thinking.

Convenience of Certain Geometrical Forms

Representation because of analogy is therefore a beautiful and essential means of interpretation. Through such

transformations as those just mentioned it preserves and renders manifest many otherwise hidden relations of quantities. It utilizes convenient geometrical forms. It renders problems tangible. It makes use of surfaces, blocks, and lines which yield themselves readily and complaisantly to our purposes, and can be cut, erased, enlarged, or divided as we will.

Thus in the primary work we can forestall the demand soon to be made upon the children for mathematical judgment by basing their instruction in fundamentals upon sensing of quantity and representing relative amounts. We can base the fundamental number facts upon imaging derived from experience of hand and eye in attending to, observing, comparing, expressing, constructing, recalling, and applying — not symbols — but things. Indeed the child will not use the symbol until he must in order to tell his little story, reveal his wonderful discovery, or make his glad confession.

Dear common flower, that grow'st beside the way,
Fringing the dusty road with harmless gold,
First pledge of blithesome May,
Which children pluck, and, full of pride, uphold,
High-hearted buccaneers, o'erjoyed that they
An El Dorado in the grass have found,
Which not the rich earth's ample round
May match in wealth — thou art more dear to me
Than all the prouder summer-blooms that be.
Lowell. — "*To the Dandelion*"

An After-School Thought

EDITH GOODYEAR ALGER Bennington Vt

The Finishing Touch

All teachers know that it not only affords children great pleasure to see their completed work mounted in an attractive form, but that it also aids in sustaining interest, furnishing a harmless, yet powerful stimulus to further effort.

A few yards of ribbon, brush, and water colors, pen, ink, and cardboard comprise an outfit for this purpose which can be utilized in a variety of simple, but effective ways.

The accompanying illustration suggests methods for putting into permanent form the nature study sketches and written work that have accumulated so rapidly.

It is helpful to label each collection with an appropriate phrase or sentence which will always suggest to the children a wealth of related thoughts.

While the twig lessons are in progress in the springtime, packages of sketches may be mounted as a large chart (Fig. 1), lettering at top of each group of drawings an appropriate line from some familiar poem, *e. g.*:

"The naked *elm* boughs tossed and swung."

"The *alder* by the river shakes out her powdery curls."

"Young *oak* leaves mist the side hill woods with pink."

These silent reminders of beautiful thoughts often become strongly associated with the objects. One child said, "Every time I see a pussy willow I think, 'Dainty pussy willow, on a swinging bough,' even before I have time to think it."

During a series of lessons on "Seeds and Seed Houses," sketches of gay little barberry clusters were made on 4x3 slips of drawing paper, several of which could easily be mounted on a large sheet of similar paper. These sheets, when tied together with a bright barberry colored ribbon, made a pretty book which was labelled "The Barberry's Snug Little Houses." Thus the work of an entire class was brought together into a comparatively small space.

It is important that these collections should contain the work, be it good, bad, or indifferent, of every child in the class; otherwise they are not only valueless as records and standards of comparison, but are practically useless to the children themselves as well. For if the work of a chosen few only, and those pupils the most capable pupils, is considered worthy of being mounted in a book, the poorer half of the class is deprived of a needed stimulus while the others are given an unnecessary one. Beckie Bright and Sammie Sharp will do well anyway, because they were born to and could hardly help it if they tried. Excellent results from pupils of superior ability reflect no real credit upon the teacher; it is poor, shiftless, half-nourished Dickie Dwaddle and all the rest of his class who put skill to the crucial test.

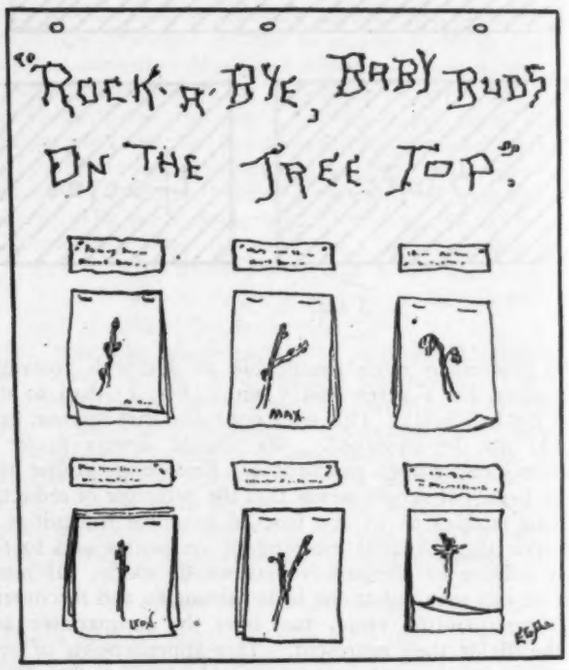


Fig. 1.

Suppose Dickie's shetch and scrawly writing, although he "did try truly," go into a pretty book or upon a dainty chart with the rest of them, what is the effect? That book becomes at once a most interesting object to the little fellow. He comes in a few minutes earlier to take a peep at it, and while poring over the leaves, gains all unconsciously, from the neat papers of Beckie and Sammie, a higher ideal, and that added inspiration for future effort which no amount of words could arouse.

"O fearless little brook, fling out your utmost forces,
The greening cresses hasten at your shining hem!
Beside, that every heart may drink joy at its sources,
Bid all fair weeds come forth to our full need of them!"

Brownies making early strawberries

Oriole's Nest Song

Here comes a rocking breeze
With a low whistle,
He will swing the little house
Where my birds nestle;
Feather of the dandelion,
Silk of the thistle
Make the pretty blankets
For their bed.

Four babies in a pouch,
A little grass stocking!
Easily could I myself
Do all the rocking,
But I love to hear the breeze
Tip-tap, knocking,
And the apple leaves a-rustle
Overhead.

Hark, hark, the rocking breeze
Through the leaves creeping!
Shut all your yellow bills,
Hush your low cheeping!
Swing, swing a lullaby —
Swing, swing, sleeping
In the silken thistle blankets
Of your bed.

— *Mrs. Clara Doty Bates*

Parent Day in the Public Schools

EMMA F. BATES Superintendent of Public Instruction North Dakota

THE purposes of our public schools, as defined by the state constitution, include the teaching of patriotism, integrity, and morality. Such instruction is to be given, as far as practicable, as will "tend to impress upon the mind the vital importance of truthfulness, temperance, purity, public spirit, and respect for honest labor." Our constitution declares these moral virtues as necessary in order to insure the continuance of popular government and the prosperity and happiness of the people. All educators are in hearty sympathy with these requirements of our contitution and statutes. The pupils of our public schools are soon to be citizens and voters. To prepare them for the responsible duties of citizenship is an essential and vital part of our educational work. They must be taught that public and private virtues go hand in hand; that individual morality and purity of life are essential qualifications for honest, faithful citizenship, and the discharge of public duties. We want a new life born into the hearts of the children and henceforth nurtured in their growing souls.

The home is the unit of government, and the perpetuity of holy home life and for the right education of the children of those homes, our nation was established and our public school system is maintained. It is universally conceded that the destiny of our state depends upon the making of good laws and the enforcement of law. To this result men spare not time, money nor effort to perfect and sustain the several departments of the state government — legislation executive, and judicial. But law does not change the nature of the individual. Is it not safer, easier, and cheaper for the state to devote such time, money, and effort in educating citizens of rightmindedness as to their relations with the state as will ensure, through them, wise legislation and willing obedience to law, rather than continuing to hold in subjection a citizenship through expense of co-ercive measures? Whatever, therefore, tends to waken a realization of the responsibility of parents to the right education of children is to be desired, as a safeguard to the state. If the home is doing its full duty, the state is safe. Our public schools, established and richly endowed by the state, are the great and important supplement to the home, and if these truths have not been properly and impressively taught in the home, the school then should be not a supplement but a substitute for the home.

A nation can be no greater, no purer, no safer, than is the life of the individual of that nation, great, pure, and safe.

It is to be hoped that the teachers and parents of this Republic will co-operate to secure such teaching as will surely result in great good to the nation and upon which very largely the perpetuity of the republic depends.

Twenty-two million children and youth of school age in our nation ought to compel the most thoughtful attention of all the adults to the present and imperative demand for the earnest co-operation of parents, school officers, teachers, and citizens to employ and perfect all methods and efforts that are necessary to secure the very best results for the education of these twenty-two million coming citizens and parents. The coming together of parents, children, officers, and teachers in the schools on a given day which shall be devoted to exercises in honor and praise of the home and family, and the inculcation of personal virtues, seems to me eminently fitting.

This day should be made one of the few most important days of the year. We celebrate the Fourth of July because it calls to memory the struggle for national independence. We celebrate Washington's birthday because he was an ideal citizen. We celebrate Arbor Day because we want to teach the children to love nature. Let us celebrate *Parents' Day* in the school to teach the children that before the individual, before the school, before the state, stands in holiness and admiration, the home and the family; to teach every child that with his laudable ambition to be an excellent pupil, while he should know that it is necessary for his own good and the good of the state that he be a law-abiding, public-spirited citizen, he should also know that the highest and holiest obligation will rest upon him as a unit of the home and in social and family relations. Exercises appropriate should be prepared by the teacher. Send special invitations to all patrons, whether they have children in school or not. Select songs, recitations, essays, dialogues bearing upon home life, its beauties and duties, the child in the home, the mother, the father, and the family.

Over and over the question is asked, "How shall we teach civil government to our younger pupils?" Government has

its foundation in the home. Loving obedience there establishes habits of obedience to civil authority any and everywhere. Here is a golden opportunity for impressive lessons in civil government.

A Parents' Day without parents would be an object lesson without the object. Let parents, if necessary, sacrifice something to be in attendance upon the exercises. Let these exercises be held in the afternoon or evening, as will convenience parents.

With these thoughts in mind I designated June 26th as Parents' Day in the public schools in North Dakota for 1896. This day was well observed with gratifying results.

— *Popular Educator*

One Little Device

Dear Editor: — A bright little boy gave me this device, though not in the following words, which may be of use to some of your readers:

Draw on the blackboard various colored maple leaves, but lacking midrib and veins. Give each child one by writing his name on the stem. Whenever a child has been good all day, he is to have a vein drawn in his leaf and all are to try to make *perfect* leaves in one week (five days corresponding to five veins.)

To me the beauty was in having the dear little man think it out, realizing the relationship between the veins and school days in a week.

Very truly
THEDA GILDEMEISTER.

State Normal School Ill.

In One School-Room

(*From a private letter.*)

Dear Editor: — Nature study with the children is the most enjoyable part of my school work. I can never be grateful enough to that noble-hearted woman who opened my eyes to nature's beauties but I can at least show a little gratitude by helping the little ones under my care to a better reading of the "story-book" ever open before them.

It is in this study as in no other, while the children, unconsciously, give little bits of themselves to me.

Last year the children were very appreciative of my efforts upon the calendar board.

Each month I drew some device to serve as a calendar, with a verse appropriate to the month near by and other signs of the season.

In April I used a device for a calendar with birds flying toward the house having umbrellas over their heads, and for the verse,

"Ha, ha, little April, you're caught in the rain,
Have patience, the sun will soon come again."

I drew a maple tree with, "Thank God for Trees," as an introduction to Arbor Day.

Sounding seemed easier when the sounds were hidden in the buds of the pussy-willow and served the double purpose of teaching sound and arrangement of buds.

I well remember one little beginner who after having eagerly drunk in the lesson on the Pussy Willow, begged to take some home and came rushing in the next morning, saying, "Oh, dear, I put my pussies in water last night and thought they would turn out to be kittens this morning, and they aren't at all."

One of the other enjoyable phases of nature work is the physical culture. When we are studying the wind, in the head movements we speak of the head as being blown north, south, etc., by the wind; then the hands tell how the wind blows, the fingers are the leaves blown about by the wind.

When we came to find that the sun shining on the water drops made a rainbow, we learned what the little Hiawatha's grandmother taught him of the rainbow,

"'Tis the Heaven of flowers you see there,—
All the wild flowers of the forest,
All the lilies of the prairie,
When on earth they fade and perish,
Blossom in that Heaven above us."

This formed a good introduction to Hiawatha, with its vivid pictures for drawing, and soon they were ready for the quaint old Indian legends of the moon and stars, and thus we mingled drawing, literature and nature.

Thus far perhaps it may seem to have been mostly my work in it all, but the children did their part. How the little hands tugged earth boxes to school, watered, watched, and pruned the contents; how they watched for earthworms, caterpillars, field mice, bird's nests, toad stools, rocks, opening buds, flowers and other things too numerous to mention to bring in for study!

What accurate observations upon the weather they made, and how they were ever ready at roll-call to answer with a thought or quotation appropriate to the season, showed their willingness to help. If my enthusiasm flagged I gained anew from the children daily.

L. M. F.

The Nature Study Fadist

And now comes the Nature study fadist, who, perchance, does not know an oak from an elm, or an eel from a snake, to analyze all the poetry out of childhood. They would stab it with petals, pelt it with buds, choke it with pith, belabor it with roots, blind it with pollen, lacerate it with blades, shoot it with pistils, befuddle it with cotyledons, and, finally, strangle it with a fibre. Then the rosy cherub, still beautiful in death, they would enshroud in a calyx, encoffin in a pericarp, and, to the doleful music of sighing conifers, inter it in the quartenary strata and mark the spot with crinoidal stones, on which offended Nature herself should carve:

"My lover lies here, and my heart is sad.
He was killed by a professional fad."

— *M. A. Cassidy in Southern School*

Never despair, though the darkening air
Sweep all your summer leaves away;
The wind may rifle your branches bare,
Your leaves will burst anew in May!

— *Christopher Pearse Cranch*

The Editor's Page

All contributions, and personal letters to editor must be addressed to 1027 Grove St., Evanston, Ill., and all business letters to the various business offices, as given on editorial page.

May

I walked with a lady last summer who knew the name of every bird the moment she heard its note. Most fervently I wished I had her knowledge. She had watched and lived with the birds in out-door life till they seemed like personal friends. She could talk of trees just as familiarly and she touched every shrub as caressingly as if it had conscious life. That lady was a teacher. She saw far more in her work and brought more to it and found more divinity in it and in her children for this intimate relationship with nature. How she despised the veneer of nature study! What is meant by veneer? A few facts *about* nature tacked on or sandwiched in to the work of the day to keep the conscience clear; she called it "duty study" of nature. Will the primary teachers take up bird study this month, in that spirit? Will they tell a few bird stories, put a bird or two upon the blackboard for the children to copy and then conclude they have done enough to satisfy the new "fad" of bird-day? Such bird study is almost worse than none. No, no, teachers, unless every little child feels more like holding out his hands to the birds that come near him, as if to seek companionship, you have not accomplished much with bird study. Ask yourselves this question and ponder its answer seriously: What will bird-study do to the child's *character?*

"The Great Round World"

Teachers, do you know anything about the little pamphlet book by this name, issued by Wm. Beverley Harrison, Publisher, 3-5 W. 18th St., N. Y. City. A weekly newspaper for boys and girls. Price 5 cts. One trial subscription for one year to any public school teacher in the United States or Canada, $1.00 net; libraries having a free reading-room for boys and girls, one subscription for $1.00. It deals with current events. Better send for sample copy.

Our Number Work

For four months large instalments of the new number work (begun in January), have appeared in this paper. It has been with special pride that we have been the first educational magazine to present the work in any extended form for the study of teachers who are broad enough and earnest enough to be hospitable to new ideas. If any others have passed this work by as something that did not concern them and for which they had "no use," we would respectfully suggest that they carefully lay aside the back numbers containing this work; for the time is coming when they will be glad of their possession, and there will be no back numbers of PRIMARY EDUCATION to be obtained, judging from the experience of the last four years. Every month the publishers have planned to allow a margin to supply the constant request for back numbers and every month sees this growing want still unsupplied — hence this hint concerning the care of such papers as contain the "Speer Number Work" as it has come to be known. This work has been ably presented by Mr. John H. Tear, principal of the Washington School, Chicago. But — his last work is done. Mr. Tear died February 15. A host of personal friends and the educational circles of Chicago in which he was a strong, steady, active force in every worthy enterprise miss him and mourn him like a brother. Perhaps no words of the thousands that have been written in appreciation of this worthy man better estimate his character than these:

"He was always in dead earnest. The center of that earnestness was the boys and girls who make up the membership of our schools. He had no envy, nor the disposition that permits its growth. He was as glad of every other person's success as he was of his own. He was a most diligent student. In addition to his work so faithfully and thoroughly done in school, he was writing on psychological subjects, and at the same time carrying almost full work in the University of Chicago. He was about the cheeriest man I ever knew. His entrance brought sunlight into a room like raising a curtain."

As a contributor to PRIMARY EDUCATION he was greatly prized, not only for the work itself but for the ideal faithfulness and promptness in meeting requirement and anticipating needs, leaving nothing to be desired. At first it seemed the number serial must suddenly close. Who could be found to take his place in this especial work. But we have been more fortunate than we dared to hope. Mr. L. W. Colwell, also a principal in the Chicago schools, has been induced to undertake the work. Mr. Colwell has made the same close study of this special number work as had Mr. Tear, is a firm believer in it, and has also watched its practical working in his own schools.

We wish it were possible for every primary teacher to see the first and second year children demonstrating this work with their blocks, and applying it to their simple practical problems. Such mental alertness and enthusiastic enjoyment is seldom, if ever, seen in the number classes of the primary schools.

Books

"Myths and Legends of Our Own Land," 2 vols. By Charles M. Skinner, (J. B. Lippincott & Co., Phila.) are collections of the stories that have been "in the air" and told at firesides as well as in print, of our own country. The "Stories of the Trees," by Mrs. Dyson, (Thomas Nelson & Sons, New York.) A book for teachers to "order" without even seeing it. 275 pages. "Essays on Nature and Culture" by Hamilton Mabie, (Dodd, Mead & Co., New York.) A rich book for the teacher's home table to take up "between whiles." "The Great World's Farm" by Selina Gaye. (Macmillan & Co., N. Y.) A book for teachers to absorb, to get ready for nature study and elementary geography. 360 pages. Price, $1.25. "Children's Stories in American Literature," by Henrietta Christian Wright, (Charles Scribner's Sons, New York.) 275 pages. Don't forget "Tommy-Anne," to get ready for Bird-Day (mentioned last month). Also "In Birdland" by Leander S. Keyser. (A. C. McClurg & Co., Chicago.) "Legends of Red Children," by Mara L. Pratt. (Werner & Co., publishers, Chicago.) A beautiful book of 128 pages, containing Indian legends. "The First Year Nature Reader," by Katherine Beebe and Nellie F. Kingsley, (Werner & Co.) A book that will be welcomed as soon as seen. Clara Louise Anderson has a new book entitled "Instrumental Characteristic Rhythms, for Home, School, and Kindergartens." (See book notice in this number.) Price, $1.25. Can only be had by addressing Miss Anderson, 222 Madison Street, Chicago.

Pen Names

No, don't cultivate the affectation of a "pen name." Say your "say" well enough to be willing to say it over your own name. But if you must conceal your individuality don't fall into alliterative romantic names.

☞ *Notice change in editorial address.*

A new Bird Magazine with colored illustrations will be announced next month.

The Wren's Nest

ALICE L. BECKWITH

SUCH a lively set of boys and girls as were gathered on the front porch you never saw. It was Dolly's birthday, and about a dozen children had been invited to take tea with her.

"What can we play now?" panted Dolly, as she sank down on the steps all out of breath, after chasing Jack Dickson upon the hay mow.

"Oh, what do you think I've found," called little Tommy Schooner, dancing around the corner.

"Oh what?" they all exclaimed. "Guess!" "A penny, most likely," said Phil.

"No sir, come and see," and Tommy led the way, the rest following.

At one end of the back piazza was a long bench covered with stone crocks or jars, turned bottom side up. The crocks were stacked one above another in big piles. One stack was pushed slightly over the edge so there was a hole up under them.

Tommy got down on the floor and looked up under the stack.

"Look there!" he said in great satisfaction, and three or four boys joined him.

"Oh, don't you touch that," cried Dolly in great alarm. "Be careful, Tommy. Come away."

"Pooh!" exclaimed one of the boys, "it's nothing but a bird's nest."

"Well, you leave it alone," cried Dolly, almost angry at the boys' heedlessness. "That's my wrens' nest. They built it when I had the measles in April. Oh, they were so cunning. I used to sit by the window and watch them. They brought straws four or five times as long as they were themselves to put into the nest. Dear little fellows, they worked so hard! Sometimes they would get a straw nearly up to the crock and the wind would blow it away and they would have to try over again.

"Mamma put some little bits of worsted out there on purpose for them, and they put those in, and rags, and chicken feathers, and grass, and lots of things. They made it with a roof so that when Mamma Wren is inside all you can see is her bill.

"One day when I got better I looked in and there were six little mites of eggs — kind of white with little specks of red and brown."

"Why didn't you keep 'em?" asked Bob.

"The idea!" cried Susie. "I should think you'd be ashamed, Bob Jenkins!"

"Why of course I wouldn't touch them *for anything*," said Dolly, "and one day I saw the Papa Wren keep flying out of the nest with something in his mouth that he would drop under that tree. I went out to see what it was, he went so many times, and I found lots of little pieces of egg shells, and when I looked in the nest instead of eggs there were six little birds about as big as two little grains of corn, one grain for the head and another for the body."

"Oh let's see 'em," said Phil. "Let's lift the crock up."

"The mother bird's in there now?" said Tommy. "I saw her fly in."

"Come away and let it be still here and perhaps she will come out," said Dolly. So they went back to the front lawn.

"On the carpet here we stand"

sang the children's voices, as one after another was called into the ring, and all was quiet on the back piazza.

Mamma Wren peeped shyly out and finding the coast clear started off in search of food.

This was what Algernon Fitzgerald had been waiting for. Now was his chance and he stole noiselessly across the grass, climbed upon the bench and began a search for those birds. He had said nothing while the children were talking, but he had made up his mind to have the first peep.

"Come, Phil, its your turn to call some one into the ring," said Nan, when,— what was that? — Such a cry as came from the back of the house.

"O, my!" cried Dolly, her face growing pale, "my birds!" and they all followed her to the spot where a fierce battle was taking place.

It seems Algernon, surprised by the unexpected return of Mamma Wren, had lost his balance and had fallen to the floor, and before he could scramble to his feet, Mamma Wren flew at him. What a fuss that mite of a bird did make! Up and down, back and forth, around his head she went until Papa Wren, hearing the alarm, joined in the fray.

How they did scream at him and scold him! Neither of them touched him but they flew so near him that he crouched there, big coward that he was, acting as if he expected any minute to have his eyes picked right out of his head.

It was the funniest kind of a sight, the birds were so *tiny*, and Algernon was so *big*.

"Why, Algernon Fitzgerald Fremont," cried Dolly, stamping her foot, "you are the wickedest boy that ever lived, and you shan't have a bit of supper to-night."

"Come, children, tea is ready," called Mrs. Fremont, and Algernon Fitzgerald took this occasion to slink off to the barn with drooping head.

Papa lifted the crock very gently after supper so that all the children could look inside and see the curious nest.

The wrens stayed there until the little ones were fully grown, and though they came back the next year and built another nest in the very same place, Algernon was never known to molest them. He would sometimes sit near by and open his eyes as he heard the chirping of the birds while they were being fed, but the memory of that May battle kept him at a safe distance.

The Birds' Ball

Spring said, "I have decided, Mother Nature, to give the birds a ball."

"What a good time they will have!" exclaimed Dame Nature.

"There ought to be flowers everywhere," suggested Spring.

"Yes, indeed," said Dame Nature, "we will have flowers and refreshments everywhere."

And then Dame Nature and Spring went to work; and such a busy, joyous time as they had getting ready for the Birds' Ball. It was no trouble either, for all things wanted to help.

"What can we do?" said the Breezes.

"Carry the word to the flowers," said Dame Nature, "and ask them to have their fairest and largest blossoms ready to open on the day of the ball."

"Can we do anything?" said the Rainclouds.

"Yes, indeed, you can," said Dame Nature. "I want you to send down gentle little showers to water the flowers and grass."

"We are sure it will not do to have it rain all the time," said the Sunbeams, quickly. "We want to help, too."

"We can't get on without the bright Sunbeams," said Dame Nature. "You must shine and shine, and do your best to help everything grow."

Then Spring said, "As we have no nightingales, how are we to send out the invitations? You know she song says:

"Spring once said to the nightingale,
'I wish to give you birds a ball!
Pray, now ask the birdies all,
The birds and birdies, great and small'."

"We have no nightingales in America, but we do have carrier-pigeons, who know how to carry messages and can fly very swiftly. We will send them," said Dame Nature.

So the carrier-pigeons took the invitations to the birds. Not one was overlooked, although some lived high up in the trees, some low down among the bushes, some in the deep forests, and others near the houses.

At last the day of the ball arrived; and, as the sun came up above the horizon, he shone upon an earth decked with flowers that were jeweled with dewdrops, which sparkled in the sunlight like diamonds.

And the birds were singing — hundreds and hundreds of them, each his own song, with all his might and main, and making all together a most jubilant chorus.

As the sun came up higher Dame Nature was heard to say, "I have provided refreshments of every kind. I hope the birds will help themselves to whatever they like best to eat."

And then such a twittering and chirruping as was heard! The robins went after worms; the humming-birds sipped nectar from the flowers; the woodpeckers ran up and down the trees after grubs; the flycatchers darted around in the air after insects — and they all found that Dame Nature had done just what she said she would, and each bird had what he liked best to eat.

Then they danced; How long? All day. That is what the song says:

"They danced all day till the sun was low;
The mother birds prepared to go;
Then one and all, both great and small,
Flew home to their nests from the birdies' ball."

Spring was happy as he traveled farther north that night, for nothing pleased him more than to make the world a gay and cheerful place.

But the owl was not happy. "Why didn't you ask me to your ball?" hooted he, crossly.

"We tried to," said Spring, "but you were sound asleep. Why didn't you give one yourself at night, when you are awake?"

"That is just what I will do," said the owl, so pleased with the suggestion that he forgot to be cross. "I will give a midsummer-night's ball, just as soon as the frogs begin to croak and the fireflies come."

— *Mary Helen Fisk in the "Outlook"*

Robin is Here

[TUNE: "Cherries are Ripe."]

Robin is here, robin is here?
O, give to him a crumb.
Robins are here, robins are here,
And O, the spring has come!
In the orchard robins sing,
On the branches see them swing,
Bringing to you, bringing to you,
Promises of spring.— *Sel.*

Go Tell the Birdies

[TUNE: "Go Tell Aunt Nabbie."]

Go tell the birdies, go tell the birdies,
Go tell the birdies, we're happy here to-day.
We'll learn our lessons, we'll learn our lessons,
We'll learn our lessons, never have a fear.
Oh, yes, we'll conquer everything that meets us,
Happy in the knowledge we're gaining every day.
Go tell the birdies, go tell the birdies.
Go tell the birdies, we're happy here to-day.

Go tell the sunshine, go tell the sunshine,
Go tell the sunshine, we love each smiling ray;
For that it wakes us so early in the morning,
Telling us gently to do our work or play.
And we are ready to go where duty calls us,
Ready, pretty sunshine, to work while we may,
Go tell the sunshine, go tell the sunshine.
Go tell the sunshine, we love each smiling ray,

Go tell the flowers, go tell the flowers,
Go tell the flowers, they're sweet as sweet can be,
Lifting their faces to kiss the sparkling rain-drops,
Giving sweetest honey, to please the busy bee,
Shedding joy and gladness over weary heart-aches,
Blessing with their fragrance every passing breeze.
Go tell the flowers, go tell the flowers,
Go tell the flowers they're sweet as sweet can be.

— *Minnie L. Randall*

May-Day

Who comes this way, with smiles so gay,
And feet so lightly tripping?
A little queen, with mantle green,
From dainty shoulders slipping.
In pink and white the blossoms bright,
Run swiftly out to meet her,
The brooks rejoice to hear her voice,
And robins sing the sweeter.

She came last year, the pretty dear,
All frolic, fun, and dimples,
She kissed the buds, untied their hoods,
And coaxed apart their crimples;
The honey-bee flew quick to see,
The white-winged moth came after;
Oh, bonny May, in work or play,
She sets the world to laughter.

— *Aunt Beth*

I'm Bobolink! Bobolink!
Here and there, quick as wink,
Before you can think —
Think! Think!
That's Bobolink!

— *Adeline Whitney*

Bob White

There's a plump little chap in a speckled coat,
And he sits on the zigzag rails remote,
Where he whistles at breezy, bracing morn,
Where the buckwheat is ripe, and stacked the corn:
"Bob White! Bob White! Bob White!"

Is he hailing some comrade as blithe as he?
Now I wonder where Robert White can be!
O'er the billows of gold and amber grain
There is no one in sight — but, hark again:
"Bob White! Bob White! Bob White!"

Ah! I see why he calls; in the stubble there
Hide his plump little wife and babies fair!
So contented is he, and so proud of the same,
That he wants all the world to know his name:
"Bob White! Bob White! Bob White!"

— *George Cooper*

O, Spring Has Come!

[TUNE: "Beulah Land."]

O, spring has come, the winter's o'er,
And we, the birds are here once more;
We come, we come, across the sea,
And swing and sing on bush and tree.

Chorus

O spring time fair! O spring time fair!
How sweet the blossom-scented air,
That softly blows o'er hill and plain,
Above the fields of starting grain,
While wild birds in the thickets sing,
Where birchen tassels sway and swing.

Yes, in your fields and meadows,
Your woods and your orchards fair,
With our jubilant joyous music
We are stirring the fragrant air;
And now to the world around us,
With sweet and melodious voice,
You may hear each wee bird calling,
Rejoice! it is spring, rejoice! — *Sel.*

The Woodpecker

Robin in the tree-top high
Sang his sweetest songs as I passed by;
Then the woodpecker said, "No song have I,
So a drummer bird I'll be!"
Rub-a-dub-dub-dub-dub-dub-dub,—
"I'm drumming here for thee."

Bluebird sings me a song of cheer —
"Be glad, be glad, tho' days are drear!"
Then the woodpecker's note sounds loud and clear
As he drums upon the tree —
Rub-a-dub-dub-dub-dub-dub-dub,—
How loud he drums for me!

The oriole sings — oh, he's gaily dressed
In orange and black — but I love the best
The pied woodpecker with crimson crest.
O woodpecker, drum for me!
Rub-a-dub-dub-dub-dub-dub-dub,—
How gaily answers he!

Of sweetest songs could I drink my fill,
Still I'd list to the sound of the woodpecker's bill.
He's my cheery friend who drums on the hill,
Oh, a drummer gay is he!
Rub-a-dub-dub-dub-dub-dub-dub,—
Oh, hear him drum for me! — *Sel.*

Bright Birds

(Three little girls wearing colors, blue, red, yellow. A boy personates the crow.)

I am a bluebird; on branches bare
I love to swing like a blossom fair,
And sing to people tired of snow
The prettiest songs of spring I know.

I am a robin "To wortle, tu whit!"
Do I mind the cold weather? no, not a bit.
Gayly I'll carol and loudly shout
Till I coax the leaves and the blossoms out.

My color is like the buttercups;
I love to dance where the wild bee sups,
I know I've not much of a voice to sing —
But I carry a sunbeam on either wing.

I'm a jolly old crow, I'd have you know,
I've sung ever since I was born;
And as for farming, I can beat
The smartest at hoeing corn;
You don't think much of my music?
That's as much as some people know.
What sound is there in this noisy world
So sweet as the song of a crow?
Caw, caw, caw.

— *Annie Chase*

Bobolink

He is singing with a will;
There's a tink, tink, tinkle, and a gurgle and a thrill,
He has lilted all the gleaming meadow over,
He has bathed him in the fragrance of the clover,
He is drunk with the perfume
To the tip of every plume!

— *Stanley Waterloo*

The Acorn

Little by little the acorn grew;
Little by little it sipped the dew;
Downward it sent a thread-like root
Up in the air sprang a tiny shoot.

Day after day, and year after year,
Little by little the leaves appear;
And now the boughs spread far and wide,
And an oak-tree stands in verdant pride.

See the white violets
Glistening here and there;
Like a broken string of pearls
They are scattered everywhere.— *Sel.*

The Song of a Bird

A little bird sat on a tree,
And all the song he sang to me
Was "Chirrup, chirrup, chirrup!"

But in that song I understood,
He'd built a nest in the wild wood,
And made it firm, and strong, and good.

After a while he changed and sang,
Till all the wood with echoes rang;
"Ki-wee, ki-wee, ki-wee!"

He told me in the nest that day,
Four little speckled eggs did lay,
All nestled warm in down and hay.

But just then pussy came walking by,
So the little bird away did fly;
"Chirrup, ki-wee, ki-wee!"

— *Frederick Johnson, in "Every Other Sunday"*

How the Corn Grows

1

When the corn begins to sprout,
Two wee leaves come peeping out.

2

When the leaves are fresh and green,
A slender stalk shoots up between.

3

While the stalk keeps on to grow,
The tiny ears begin to show.

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4

When the ears are long and thin,
The pretty silk begins to spin.

5

When the pretty silk is spun,
It turns the color of the sun.

6

When the summer sun is gone,
It's time to gather in the corn.

— *Anon*

Waiting to Grow

Little white snowdrop, just waking up,
Violet, daisy, and sweet buttercup!
Think of the flowers that are under the snow,
Waiting to grow!

And think what hosts of queer little seeds —
Of flowers and mosses, and ferns and weeds —
Are under the leaves and under the snow,
Waiting to grow!

Think of the roots getting ready to sprout,
Reaching their slender brown fingers about,
Under the ice and the leaves and the snow,
Waiting to grow!

Only a month or a few weeks more,
Will they have to wait behind that door;
Listen and watch for they are below —
Waiting to grow!

Nothing so small, or hidden so well,
That God will not find it, and very soon tell
His sun where to shine, and his rain where to go,
To help them to grow!

— *Skinner's Arbor Day Manual*

May

All the buds and bees are singing;
All the lily bells are ringing;
All the brooks run full of laughter,
And the wind comes whispering after.
What is this they sing and say?
"It is May!"

See! The fair blue sky is brighter,
And our hearts with hope are lighter,
All the bells of joy are ringing;
All the grateful voices singing:
All the storms have passed away.
"It is May!" — *Sel.*

The Thimble

(Recitation for a little girl holding up one hand and a thimble in the other.)

Little finger, slim and nimble,
Here am I, your friendly Thimble.
(Germans call me "Finger-hat";
Jolly little name is that.)
Put me on, and you will see
What a helper I can be.
Brother Needle's very fine —
Sharp and clever in his line,
But he oft would puzzled be,
If he had no help from me!
When the cloth is stiff and hard,
Oft his headlong dash is barred,
And he balks, and frets, and pricks:
Says, "I'm in a dreadful fix!
This will never, never do —
I shall really break in two."
Then's my time. No fuss or rush,
Just a steady, patient push —
And the stiffened fibre slacks,
And the stubborn threads relax,
And Friend Needle darts along,
Singing his triumphant song,
Yes, I may not be so keen,
Nor so brilliant to be seen,
But 'tis true that without me
Ofttimes he would puzzled be.

— *Laura E. Richards in St. Nicholas*

May's Outfit

Sweet May is Nature's darling child;
She held the maiden close and smiled,
And softly patted one soft cheek,
Where dimples played their hide and seek.

"Dear child," she said, "you need a gown,
For this is old and frayed and brown.
Ho, Sunbeams! come and weave for May
A gown of colors rich and gay."

Ah! merrily the sunbeams weave
From early morn till dewy eve;
Their gleaming shuttles never rest
Until the maiden stands full dressed.

Her gown is softly green in hue,
With sprigs of yellow and of blue;
The misty veil she wears was dipped
In dews the bee from violets sipped.

Dame Nature loves this child the best,
Though good and fair are all the rest.
May's gentle ways and charming wiles
Call forth her laughter and her smiles.

— *Anthony E. Anderson*

Sleepyland

I've a passenger here for sleepyland,
Away over there on the shimmering strand,
By the breezes fanned, by the blue waves kissed,
A beautiful city all built of mist.

When the shadows lengthen and night comes down
With its peace and quiet over the town.
My little passenger takes my hand
And away we sail for Sleepyland.

We sail slowly along on the mystic sea
While the stars above wink sleepily.
We have music too, 'tis a lullaby song,
As we float along, as we float along.

The blue eyes close, the tale is told,
The soft hand loosens its clinging hold,
Our boat's keel touches the shining strand —
My passenger's safe in Sleepyland.

— *Anna May Hathorn*

The Violets

I know blue, modest violets,
Gleaming with dew at morn,
I know the place where you came from
And the way that you were born.

When God cuts holes in heaven,
The holes the stars look through,
He lets the scraps fall down to earth —
The little scraps are you. — *Sel.*

The Robin

Little prophet on the tree,
Flying to and fro,
Will you kindly tell to me
How you come to know
Where the happy spring must be,
After frost and snow?
How is it you can see
Where God's flowers grow?

— *William Brunton, in "Every Other Sunday"*

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